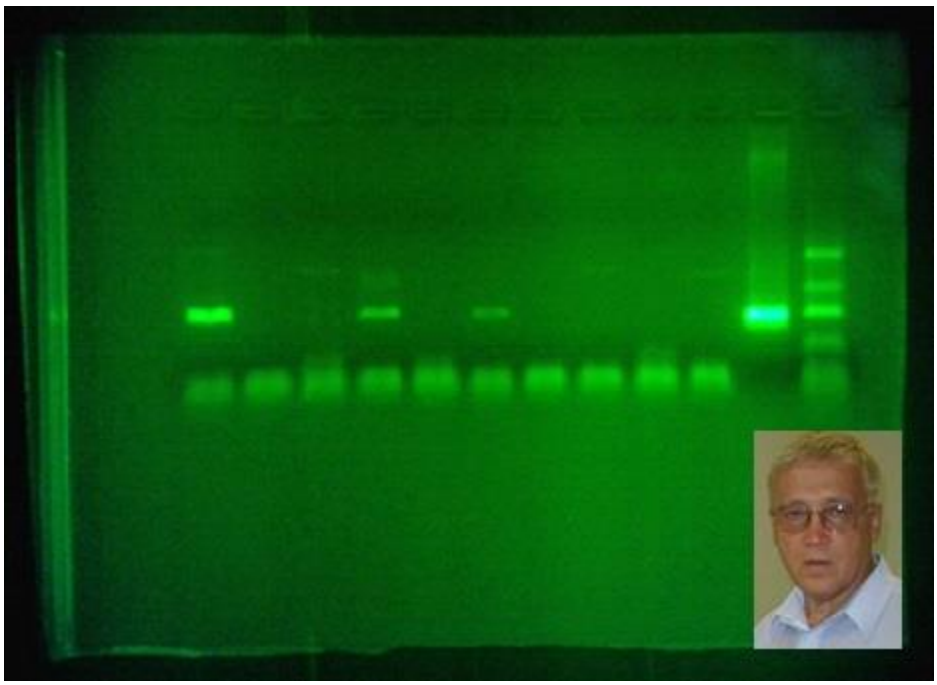
# DNA Decipher Journal

## Volume 4 Issue 1

## Materialization of DNA Fragment and, Wave Genetics in Theory & Practice

*Focus Issue Featuring the Work of Peter P. Gariaev's Group*



**Materialization of DNA through Modulated EM Irradiation;**
**Possible Quantum Entanglement in Medical Influence;**
**On Pollack's Findings about Fourth Phase of Water;**
**Morphogenesis, Morphostasis & Learning in TGD;**
**Linguistic & Wave Genetics in Theory and Practice; &**
**The Strange World of Wave Genetics.**

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**Preliminary Report**

# Materialization of DNA Fragment in Water through Modulated Electromagnetic Irradiation

Peter P. Gariaev* *et al.*

## ABSTRACT

We present a preliminary report on the materialization of DNA fragment in pure water in the presence of its phantom delivered by modulated wide-spectrum electromagnetic irradiation. A full article with details will be presented later.

**Key Words:** DNA synthesis, DNA fragment, phantom, wave genetics, modulation, electromagnetic irradiation.

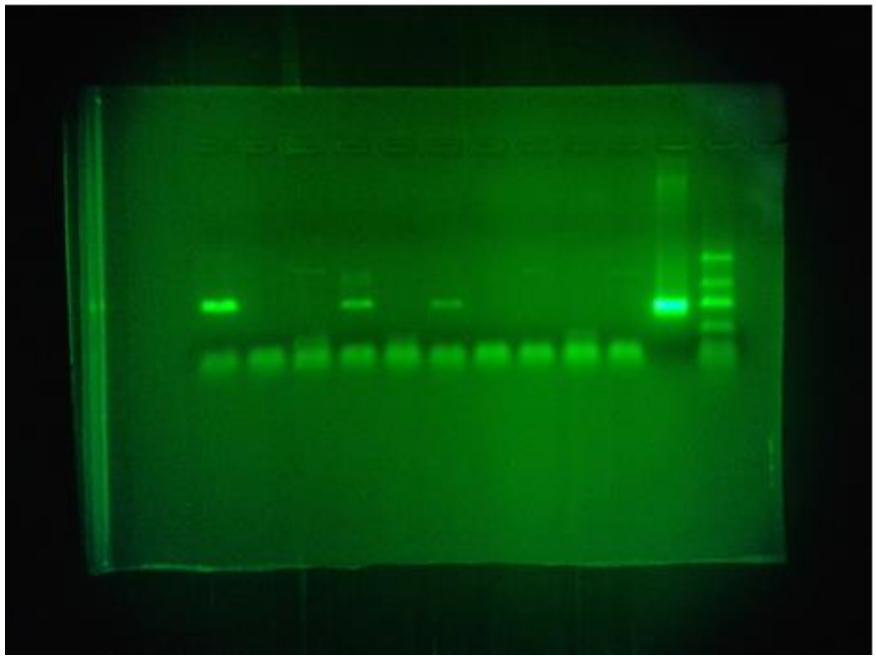

**Figure 1**. Left to right: (1) the top bands in 1st, 4th and 6th strips are DNA synthesized in water; (2) the band in 11th strip is the sample DNA (268bp) which was received by mShEI spectrum and the latter was then served on the water; (3) the higher 4 bands in the 12th strip shows markers 139, 268, 394 and 613 (base pairs of DNA); (4) the bottom bands in the strips are from Schmier primers; and (5) the 9th strip is control.

The herein author first discovered the phenomenon of DNA phantom in 1984 and subsequently

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did numerous related research. The first publications in the wave transfer of genetic information came in 2003 [P.P. Garyaev, 2003, Cloning, AIDS, cancer, diabetes and wave genetics. Consciousness and Physical Reality. Vol. 8, № 2, pp. 52-60; P.P. Gariaev, 2003, Der wellengenetische Code. Tattva Viveka, № 20, pp. 68-73 (In German); P. P. Garyaev, E. A. Leonova, 2003, Strange world of wave genetics. Consciousness and Physical Reality, Vol.8, № 6, pp. 27-40]. More recently, there was an article on the same subject by Luc Montagnier's group in "DNA waves and water" http://arxiv.org/pdf/1012.5166.pdf. This paper provides experimental evidence of remote (high) wave transmission of DNA information directly into water.

Here we give a preliminary report on the results from one of our latest experiments on the synthesis of DNA fragment in water in the presence of its phantom through modulated wide-spectrum electromagnetic irradiation. A full article with details will be presented later.

Figure 1 shows one of our experiments on the synthesis of DNA fragment by PCR (Polymer Chain Reaction) in the presence of the phantom mWEI (modulated wide-spectra Electromagnetic Irradiation) of the said DNA fragment.

From left to right, Figure 1 shows: (1) the top bands in 1st, 4th and 6th strips are DNA synthesized in water; (2) the band in 11th strip is the sample DNA (268bp) which was received by mShEI spectrum and the latter was then served on the water; (3) the higher 4 bands in 12th strip shows markers 139, 268, 394 and 613 (base pairs of DNA); (4) the bottom bands in the strips are from Schmier primers; and (5) the 9th strip is control.

Prospects of broadcasting working genes based on this technology are potentially vast. For example, it may be used to program stem cells for regenerating the retina, teeth and all other organs and tissues such as damaged endocrine glands, the spinal cord and the brain (we have done case studies). Further, it may be sued to repair chromosomal damage such as cystic fibrosis and reduce excess chromosome in Down's syndrome and treat the terminal cancer (we have done case studies). Further work in this direction will give a powerful impetus to new development of biology, bio-computation, medicine, agriculture, bio-internet and deep space communications, etc.

**Article**

# Possible Quantum Entanglement in Medical Influence

B. S. Usupbekova, R. A. Mansurova & Peter P.Gariaev*

**ABSTRACT**

In this paper we reports our results on the effect of the audio version of the modulated wide-spectrum electromagnetic radiation (mShEI) containing information of medicinal plants and minerals. We observed positive effect on recovery and body functions in a group of patients. According to the results of pulse diagnosis (PD) and electroacupuncture diagnostics (EPD), there is increased functional activity of all acupuncture channels.

**Key Words:** quantum bio-computer (QB), mShEI spectrum, pulse and electro-diagnostics, acupuncture channels, self-regulation.

## Introduction

The human body, from the quantum level to the cell-tissue-organ levels, has the ability to self-organization, self-regulation, self-healing and homeostasis – this is a kind of bio-computation.

In this sense, we find some confirmation in the new field of biology and medicine, linguistics-wave-genetics [1, 6]. This field is based on the understanding of the genetic system as a quantum bio-computer (QB) which is not only responsible for the genetic history but also provides key regulations of metabolism. Thus, the principle of QB is holographic, linguistic and quantum non-locality of regulatory wave commands.

The pilot model of this artificial world QB is based on laser technology [1]. QB is capable of the following functions bio-computer - a) reading a wave of genetic information from chromosomes and cell tissue, b) for converting scans (recording information) laser photons modulated wideband electromagnetic radiation (mShEI) keeping the primary photon received genetic information, and c) the wave translation of genetic information at macro distances, d) the introduction of genetic information in the form mShEI in the recipient organism, in its intracellular water, e) programmable control correction of metabolism and physiology of the recipient, for example, a sick or old person. It is theoretically substantiated and experimentally demonstrated http://www.wavegenetic.ru.

The first publications in the wave transfer of genetic information came in 2003 [P.P. Garyaev, 2003, cloning, AIDS, cancer, diabetes and wave genetics. Consciousness and Physical Reality. Tom.8, № 2, pp. 52-60; P.P. Gariaev, 2003, Der wellengenetische Code. Tattva Viveka, № 20, pp.68-73. (In German); P.P.Garyaev, E.A.Leonova, 2003, strange world of wave genetics. Consciousness and Physical Reality", vol.8, № 6, p.27-40.

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Only after this work there was an article on the same subject by Luc Montagnier's group in "DNA waves and water" http://arxiv.org/pdf/1012.5166.pdf This paper provides experimental evidence of remote (high) wave transmission structure of DNA directly into the water. Unfortunately, Montagnier's group did not refer to our above are published in 2003 and others. In addition, we have demonstrated experimental wave immunity in animals [8].

There are ideas about acupuncture channels (AC) as the functional systems involved in the provision of psychosomatic interactions. We assume that an audio version of the spectra mShEI can retain the properties of the information source in modulated laser radiation. Thus, bioactive agents of plants and minerals should be reflected in the the functional activity of AC. The most informative method of assessing AC, and, through it, the condition of the internal organs, is pulse diagnosis (PD) and electroacupuncture diagnostics (EPD) [3, 4]. This assumption is confirmed by the EPD healers and indicators of PD and EPD participants' self-education "Key. The healers, after appropriate psychological adjustment, were able to walk on broken glass and hot coals without injury [3, 4].

In this paper we attempt to analyze the changes in the dynamics of some indicators AC participants owning psychophysiological methods of self-regulation "Key" [4]. Self-regulation - is the key to the system of self-organization, self-development and self-improvement. This is easiest way to achieve inner harmony of man [2, 7].

For the purpose of the evaluation of the PD and EPD, we have attempted to change the physiological functions of seminarians to slow down the aging process, with an audio version of mShEI spectra of medicinal plants and minerals.

## Materials and Methods

The studies were conducted during the 5-day seminar on "Advanced method of self-regulation." The seminar was attended by 36 people who learned the method of self-regulation "Key", 9 (25%) men and 27 (75%) women. The average age of the study group patients is 51.9 ± 2.7 years. PD and EPD were measured before the seminar, and 1 day and 10 days after the seminar on self-regulation. The seminar program used the audio of PLR-spectrum of medicinal plants and minerals recorded as the normalization factor of the physiological functions of body systems, where the rates of AC is the basis for the development of technologies deceleration of aging in humans.

To record the dietary mShEI spectra in the audio version, QB was created with synchrotron radiation He-NE laser (2mW power, wavelength 632.8 nm) with two orthogonally related to the intensity, optical modes that can interact with each other in such a way that the sum of their intensities remained unchanged [1, 6]. In the interaction of at least one mode of the laser radiation with the scanned object (the donor), quantum information from the donor is read through the redistribution of the intensity of the optical modes in the polarization corresponding to the new state after the interaction of the laser beam with dynamic scanning of biologically active substances (the donor).

One of the modes of the laser radiation in the QB, with a certain mode of generation, was capable of interaction with a donor as the cause of the active radiation QB modulated broadband light (mShEI) in the range of 2 to 0 [1, 6]. In this mShEI correlated with modulations in the optical modes of the probe laser radiation and therefore retains mShEI quantum bio-information obtained by optical reading it with the donor. These modulations depend on the rotational vibrations of microstructural components of scanned objects (e.g., liquid crystal domains of DNA in the chromosomes of plants), i.e., optical activity of bio-information donor.

mShEI is a radio wave signal in the range 640-700 kHz which is supplied to a personal computer with a special program after scanning the donor. The output of the Fourier spectrum of the detected dynamic radio characterizes the parameters (bio-information) of the scanned donor. The physics of these processes is given in [1]. Thus, the laser-generated CB radio-frequency radiation is the result of reading dietary wave (quantum) information from any suitable bioactive donor - minerals, plant extracts, living cells and tissues, cell biological structure of DNA, RNA, etc.

Such information is noninvasive, non-contact and can be safely administered into the human body, animals, plants and micro-organisms [1]. mShEI spectrum can be translated into sound and recorded on compact discs (CD) in mp3 format, i.e., in the range of hearing, which stores information of bioactive properties of the original radio-wave mShEI [1, 6].

Study of the biological effects of mShEI recordings in the audio version was performed according to known methods [1, 6]. Each unit consisted of diagnostic examination procedures of consistent implementation of PD and EPD. For comparison, the analyzed parameters of the functional state of AC used a five-point rating scale [4, 5, 8], medicinal plants and minerals.

## Results and Discussion

Improvement in functional status of AC was observed on the 10th day after the seminar on the impact of self-regulation of audio mShEI - spectra of medicinal plants and minerals. The results of these EPD (Figure 1) showed that one day after the end of the workshop observed variation in AC. This indicates that the sound effects to alter the functional state of the AC are harmonized in 10 days. General improvement of health occurs between 17% and 36% of 29 seminarians. In 7 participants their health was 80% -89% before the workshop. The other seminarians showed between 46% and 68% health before the workshop.

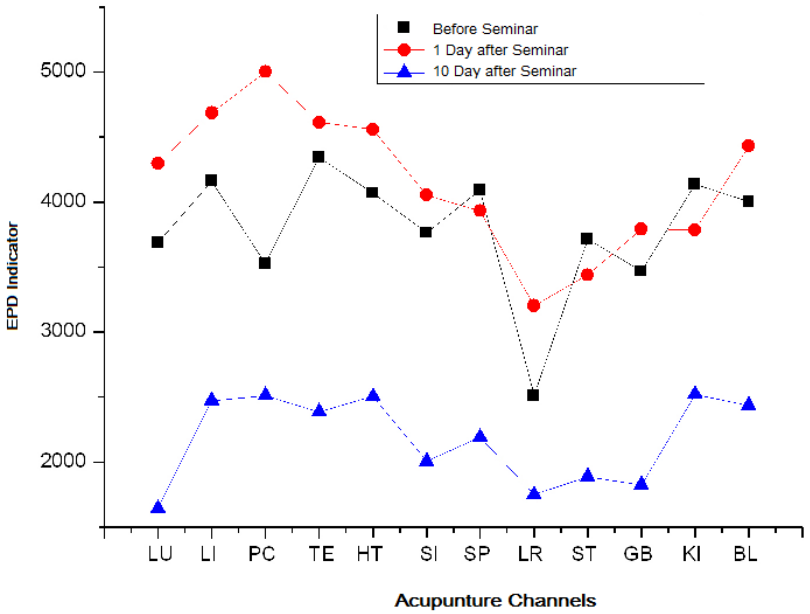


**Fig.1.** Dynamics of indicators EPD at a seminar on self-regulation with an audio version of LHP - spectra of medicinal plants and minerals

It should be noted that, during the EPD measurement of AC, an increase in electrical resistance above normal corresponds to a negative value for the PD. For simplicity, visual indicators of the two diagnostic axes are down in Fig. 2. It is can be seen in Fig. 2 that there is a coincidence orientation deviation between parameters PD and EPD and the presence of the correspondence between the results, except for the channel HT.

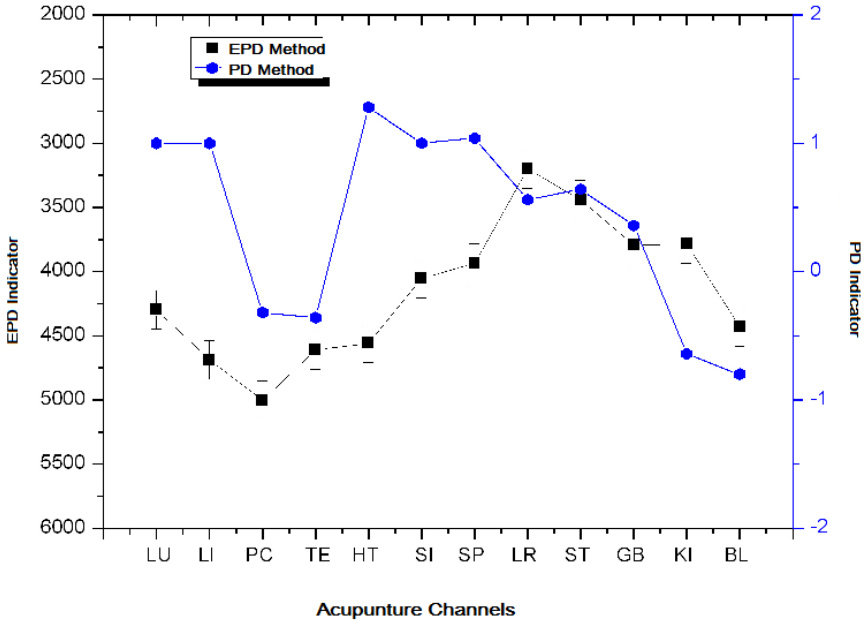


**Fig.2**. Comparison of indicators EPD and PD at a seminar on self-regulation with an audio version of LHP - spectra of medicinal plants and minerals

Changes in PD are presented in Fig. 3. As with the EPD, the trend is to reduce the spread of values of indicators PD after a seminar on self-regulation. PD parameters tend to "normal", i.e., to around 0.

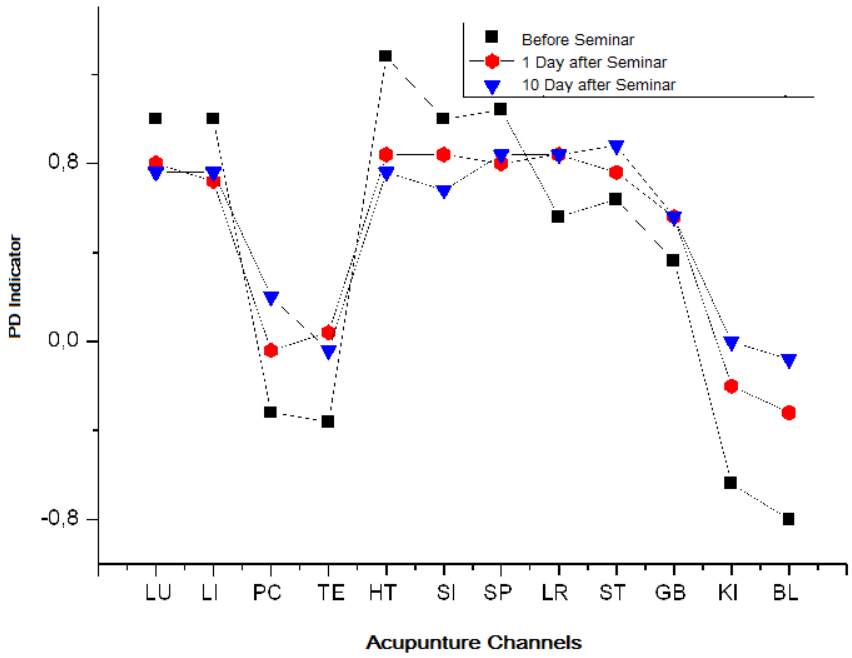


**Fig.3**. Dynamics of parameters PD before and after seminar on self-regulation with an audio version of LHP - spectrum of medicinal plants and minerals

Analysis of the interaction of AC on the results of PD and EPD was performed by calculating the non-parametric correlation coefficients Kendall. These calculations on EDR are presented in Table 1.

**Table 1**. The coefficients for the Kendall nonparametric vzaimokorrelyatsii electro diagnostic results before and after the seminar on self-regulation

| | | | **EPD after the seminar** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **LU** | **LI** | **PC** | **TE** | **HT** | **SI** | **SP** | **LR** | **ST** | **GB** | **KI** | **BL** |
| **EPD before seminar** | **LU** | left | 1,00 | **0,68** | **0,65** | **0,54** | **0,61** | **0,70** | **0,50** | **0,58** | 0,23 | **0,47** | **0,43** | **0,48** |
| | | right | 1,00 | **0,61** | **0,42** | **0,60** | **0,66** | **0,52** | **0,42** | **0,60** | **0,41** | **0,51** | **0,37** | **0,50** |
| | **LI** | left | **0,57** | 1,00 | **0,54** | **0,51** | **0,57** | **0,74** | **0,45** | **0,53** | **0,38** | **0,54** | **0,44** | **0,42** |
| | | right | **0,37** | 1,00 | **0,54** | **0,58** | **0,65** | **0,50** | **0,33** | **0,49** | **0,48** | **0,57** | **0,43** | **0,35** |
| | **PC** | left | **0,56** | **0,49** | 1,00 | **0,57** | **0,63** | **0,59** | **0,55** | **0,46** | 0,22 | **0,57** | **0,34** | **0,56** |
| | | right | **0,43** | **0,53** | 1,00 | **0,36** | **0,50** | **0,29** | 0,23 | 0,28 | 0,22 | **0,37** | 0,19 | **0,44** |
| | **TE** | left | **0,47** | **0,45** | **0,48** | 1,00 | **0,66** | **0,53** | **0,46** | **0,34** | **0,43** | **0,44** | **0,40** | **0,50** |
| | | right | **0,48** | **0,51** | **0,47** | 1,00 | **0,65** | **0,58** | 0,24 | **0,40** | **0,30** | **0,42** | **0,29** | 0,24 |
| | **HT** | left | **0,55** | **0,48** | **0,60** | **0,43** | 1,00 | **0,67** | **0,40** | **0,40** | **0,32** | **0,46** | 0,24 | **0,36** |
| | | right | **0,56** | **0,54** | **0,58** | **0,65** | 1,00 | **0,49** | **0,41** | **0,49** | **0,38** | **0,51** | **0,38** | **0,40** |
| | **SI** | left | **0,51** | **0,52** | **0,56** | **0,38** | **0,62** | 1,00 | **0,49** | **0,57** | **0,42** | **0,52** | **0,49** | **0,36** |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | right | **0,51** | **0,42** | **0,47** | **0,58** | **0,57** | 1,00 | 0,22 | **0,34** | **0,47** | **0,46** | **0,46** | 0,28 |
| | left | left | **0,37** | **0,36** | **0,36** | **0,28** | **0,20** | **0,32** | 1,00 | **0,59** | **0,37** | **0,53** | **0,50** | **0,45** |
| | | right | **0,43** | 0,24 | **0,30** | **0,39** | **0,48** | 0,27 | 1,00 | **0,45** | **0,41** | **0,46** | **0,38** | 0,22 |
| | | left | 0,27 | 0,19 | 0,11 | 0,08 | 0,14 | 0,21 | 0,23 | 1,00 | **0,38** | **0,56** | **0,45** | **0,46** |
| | **LR** | right | 0,23 | 0,17 | **0,33** | **0,40** | **0,43** | **0,30** | 0,25 | 1,00 | **0,59** | **0,64** | **0,51** | **0,41** |
| | | left | **0,31** | **0,32** | **0,40** | 0,22 | **0,38** | **0,36** | 0,16 | 0,00 | 1,00 | **0,43** | **0,30** | **0,30** |
| | **ST** | right | **0,36** | **0,33** | 0,19 | 0,28 | **0,32** | 0,15 | 0,19 | **0,42** | 1,00 | **0,65** | **0,70** | **0,40** |
| | | left | **0,34** | **0,29** | 0,26 | 0,16 | **0,41** | **0,44** | 0,23 | 0,15 | **0,52** | 1,00 | **0,37** | **0,46** |
| | **GB** | right | **0,42** | 0,27 | **0,44** | **0,53** | **0,43** | **0,42** | **0,34** | **0,35** | **0,41** | 1,00 | **0,66** | **0,40** |
| | | left | **0,34** | **0,29** | 0,13 | 0,06 | 0,27 | 0,22 | 0,24 | 0,27 | 0,16 | 0,38 | 1,00 | **0,33** |
| | **KI** | right | **0,32** | **0,32** | 0,25 | **0,49** | **0,35** | 0,20 | **0,30** | 0,23 | 0,20 | **0,32** | 1,00 | **0,30** |
| | | left | **0,52** | **0,52** | **0,55** | **0,33** | **0,52** | **0,46** | **0,41** | 0,01 | **0,28** | **0,29** | 0,18 | 1,00 |
| | **BL** | right | **0,35** | 0,23 | **0,30** | **0,48** | **0,41** | **0,47** | **0,30** | **0,38** | 0,23 | **0,34** | 0,28 | 1,00 |

Correlation coefficients Kendall, with the significance level of <0.05 are in bold, the values of the left and the right have a significance level of <0.05 are highlighted in dark gray tone, the central diagonal of shared values before and after a workshop on self-regulation are highlighted in light gray.

**Table 2**. The coefficients for the Kendall nonparametric vzaimokorrelyatsii results of pulse diagnosis before and after the workshop on self-regulation

| | | **PD after the seminar** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **LU** | **LI** | **PC** | **TE** | **HT** | **SI** | **SP** | **LR** | **ST** | **GB** | **KI** | **BL** |
| **PD before seminar** | **LU** | 1 | **0,531** | 0,064 | 0,192 | **0,56** | **0,521** | **0,558** | **0,655** | **0,421** | 0,24 | 0,237 | 0,313 |
| | **LI** | **0,812** | 1 | 0,298 | **0,392** | **0,498** | **0,65** | **0,699** | **0,816** | **0,747** | **0,57** | 0,074 | 0,126 |
| | **PC** | -0,196 | -0,345 | 1 | **0,857** | 0,138 | 0,137 | 0,075 | 0,196 | 0,173 | 0,15 | 0,171 | 0,085 |
| | **TE** | -0,142 | -0,322 | **0,968** | 1 | 0,318 | 0,315 | 0,202 | 0,318 | 0,268 | 0,236 | 0,274 | 0,182 |
| | **HT** | **0,603** | **0,674** | -0,256 | -0,223 | 1 | **0,886** | **0,783** | **0,601** | **0,396** | 0,246 | 0,162 | 0,063 |
| | **SI** | **0,545** | **0,683** | -0,204 | -0,187 | **0,764** | 1 | **0,917** | **0,8** | **0,533** | 0,339 | 0,238 | 0,149 |
| | **SP** | **0,624** | **0,474** | 0 | 0,01 | **0,656** | **0,574** | 1 | **0,873** | **0,572** | 0,347 | 0,175 | 0,227 |
| | **LR** | 0,123 | 0,056 | 0,128 | 0,117 | 0,346 | 0,209 | 0,296 | 1 | **0,671** | **0,438** | 0,233 | 0,319 |
| | **ST** | 0,19 | 0,288 | 0,028 | 0,091 | **0,411** | **0,529** | **0,426** | 0,155 | 1 | **0,521** | 0,104 | 0,146 |
| | **GB** | 0,03 | 0,119 | 0,162 | 0,132 | 0,174 | 0,251 | 0,278 | **0,494** | 0,28 | 1 | -0,159 | -0,15 |
| | **KI** | 0,143 | 0,015 | 0,214 | 0,212 | 0,079 | 0,154 | 0,308 | **0,361** | 0,326 | **0,359** | 1 | **0,872** |
| | **BL** | 0,15 | -0,052 | 0,145 | 0,192 | 0,048 | 0,089 | 0,246 | 0,273 | 0,294 | 0,295 | **0,823** | 1 |

Table 2. shows the values of the correlation coefficients calculated for Kendall PD measurement results before and after the seminar on self-regulation. Correlation coefficients Kendall, with the significance level of <0.05 are in bold, the central diagonal of shared values before and after the seminar highlighted in light gray.

The results of this study confirm the possibility of using the methods of reflex diagnosis in participants psychophysiological self-regulation "Key" with an audio version of LHP - spectra of medicinal plants and minerals. Characteristic changes in indicators of PD and EPD, showing

normalization of the functional state of the AC and their activation of the internal organs, are revealed.

## Conclusion

The study showed the effect of the audio version of mShEI spectra of medicinal plants (Helichrysum, Gotha - Cola Ginngo - Tee, St. John's, ginger, motherwort, milk, etc.) and minerals (B-quartz, gold citrine, solar stone, topaz) on PD and EPD. Following the seminar on self-regulation, functional improvement of AC was observed. This is most clearly seen in terms of EPD. A comparative analysis of the parameters PD and EPD a match direction of the deviation parameters AC and shows that there is compliance between their results, except channel HT. PD and EPD are informative, simple, non-invasive diagnostic methods with the program and restore the physiological formation of functional systems of the body, which is the basis for development of technologies deceleration of aging in humans.

On the whole the work confirms and develops the previously obtained theoretical models and experimental results [1, 5, 6, 8], i.e., the ability of electromagnetic fields in certain circumstances bioactive transfer quantum information from the donor to the recipient and is controlled to manage their most important biological functions. We would further suggest that a group of people may cause quantum entanglement (collective non-local state) through the transmission of the signals of medical mShEI; and, accompanied by the unconscious quantum bio-computer, they may develop an exit strategy from their own pathologies prior to the mShEI impact. To some extent, we theoretically discussed such phenomena previously (See http://dnadecipher.com/index.php/ddj/article/view/4).

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**Article**

# Pollack's Findings about Fourth Phase of Water: TGD Point of View

Matti Pitkänen [1]

**Abstract**

The discovery of negatively charged exclusion zone formed in water bounded by gel phase has led Pollack to propose the notion of gel like fourth phase of water. In this article this notion is discussed in TGD framework. The proposal is that the fourth phase corresponds to negatively charged regions - exclusion zones - with size up to 100-200 microns generated when energy is fed into the water - say as radiation, in particular solar radiation. The stoichiometry of the exclusion zone is $H_{1.5}O$ and can be understood if every fourth proton is dark proton residing at the flux tubes of the magnetic body assignable to the exclusion zone and outside it. This leads to a model for prebiotic cell as exclusion zone. Dark protons are proposed to form dark nuclei whose states can be grouped to groups corresponding to DNA, RNA, amino-acids, and tRNA and for which vertebrate genetic code is realized in a natural manner. The voltage associated with the system defines the analog of membrane potential, and serves as a source of metabolic energy as in the case of ordinary metabolism. The energy is liberated in a reverse phase transition in which dark protons transform to ordinary ones. Dark proton strings serve as analogs of basic biopolymers and one can imagine analog of bio-catalysis with enzymes replaced with their dark analogs. The recent discovery that metabolic cycles emerge spontaneously in the absence of cell supports this view.

# 1 Introduction

The discovery of negatively charged exclusion zone formed in water bounded by gel phase has led Pollack to propose the notion of gel like fourth phase of water. One can find a biographical sketch [3] (`http://faculty.washington.edu/ghp/cv/`) giving a list of publications containing items related to the notions of exclusion zone and fourth phase of water discussed in the talk.

## 1.1 Basic findings

I list below some basic experimental findings about fourth gel like phase of water made in the laboratory led by Gerald Pollack [5].

1. In water bounded by a gel a layer of thickness up to 100-200 microns is formed. All impurities in this layer are taken outside the layer. This motivates the term "exclusion zone". The layer consists of layers of molecular thickness and in these layers the stoichiometry is $H_{1.5}O$. The layer is negatively charged. The outside region carries compensating positive charge. This kind of blobs are formed in living matter. Also in the splitting of water producing Brown's gas negatively charged regions are reported to emerge [2, 1].

2. The process requires energy and irradiation by visible light or thermal radiation generates the layer. Even the radiation on skin can induce the phase transition. For instance, the blood flow in narrow surface veins requires metabolic energy and irradiation forces the blood to flow.

3. The layer can serve as a battery: Pollack talks about a form of free energy deriving basically from solar radiation. The particles in the layer are taken to the outside region, and this makes possible disinfection and separation of salt from sea water. One can even understand how clouds are formed and mysteries related to the surface tension of water as being due the presence of the layer formed by $H_{1.5}O$.

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4. In the splitting of water producing Brown's gas [2, 1] having a natural identification as Pollack's fourth phase of water the needed energy can come from several alternative sources: cavitation, electric field, etc...

### 1.2 Summary of TGD inspired model for the findings

In the following this notion is discussed in TGD framework. The proposal is that the fourth phase corresponds to negatively charged regions - exclusion zones - with size up to 100-200 microns generated when energy is fed into the water - say as radiation, in particular solar radiation. The stoichiometry of the exclusion zone is $H_{1.5}O$ and can be understood if every fourth proton is dark proton residing at the flux tubes of the magnetic body assignable to the exclusion zone and outside it.

This leads to a model for prebiotic cell as exclusion zone. Dark protons are proposed to fork dark nuclei whose states can be grouped to groups corresponding to DNA, RNA, amino-acids, and tRNA and for which vertebrate genetic code is realized in a natural manner. The voltage associated with the system defines the analog of membrane potential, and serves as a source of metabolic energy as in the case of ordinary metabolism. The energy is liberated in a reverse phase transition in which dark protons transform to ordinary ones. Dark proton strings serve as analogs of basic biopolymers and one can imagine analog of bio-catalysis with enzymes replaced with their dark analogs. The recent discovery that metabolic cycles emerge spontaneously in absence of cell support this view.

## 2 Dark nuclei and Pollack's findings

While listening the lecture of Pollack I realized that a model for dark water in term of dark proton sequences is enough to explain the properties of the exotic water according to experiments done in the laboratory of Pollack. There is no need to assume sequences of half-dark water molecules containing one dark proton each.

### 2.1 Model for the formation of exclusion zones

The data about formation of exclusion zones allows to construct a more detailed model for what might happen in the formation of exclusion zones.

1. The dark proton sequences with dark proton having size of order atomic nucleus would reside at the flux tubes of dark magnetic field which is dipole like field in the first approximation and defines the magnetic body of the negatively charged water blob. This explains the charge separation if the flux tubes have length considerably longer than the size scale of the blob which is given by size of small cell. In the model inspired by Moray B. King's lectures charge separation is poorly understood.

2. An interesting question is whether the magnetic body is created by the electronic currents or whether it consists of flux tubes carrying monopole flux: in the latter case no currents would be needed. This is obviously purely TGD based possibility and due to the topology of $CP_2$.

3. This means that in the model inspired by the lectures of Moray B. King discussed above, one just replaces the sequences of partially dark water molecules with sequences of dark protons at the magnetic body of the $H1.5O$ blob. The model for the proto-variants of photosynthesis and metabolism remain as such. Also now genetic code would be realized [7, 8].

4. The transfer of impurities from the exclusion zone could be interpreted as a transfer of them to the magnetic flux tubes outside the exclusion zone as dark matter.

These primitive forms of photosynthesis and metabolism form could be key parts of their higher level chemical variants. Photosynthesis by irradiation would induce a phase transition generating dark

magnetic flux tubes (or transforming ordinary flux tubes to dark ones) and the dark proton sequences at them. Metabolism would mean burning of the resulting blobs of dark water to ordinary water leading to the loss of charge separation. This process would be analogous to the catabolism of organic polymers liberating energy. Also organic polymers in living matter carry their metabolic energy as dark proton sequences: the layer could also prevent their hydration. That these molecules are typically negatively charged would conform with the idea that dark protons at magnetic flux tubes carry the metabolic energy.

The liberation of energy would involve increase of the p-adic prime characterizing the flux tubes and reduction of Planck constant so that the thickness of the flux tubes remains the same but the intensity of the magnetic field is reduced. The cyclotron energy of dark protons is liberated in coherent fashion and in good approximation the frequencies of the radiation corresponds to multiplies of cyclotron frequency: this prediction is consistent with that in the original model for the findings of Blackman and others [6].

The phase transition generating dark magnetic flux tubes containing dark proton sequences would be the fundamental step transforming inanimate matter to living matter and the fundamental purpose of metabolism would be to make this possible.

## 2.2 Minimal metabolic energy consumption and the value of membrane potential

This picture raises a question relating to the possible problems with physiological temperature.

1. The Josephson radiation generated by cell membrane has photon energies coming as multiples of $ZeV$, where $V$ is membrane potential about .06 V and $Z = 2$ is the charge of electron Cooper pair. This gives $E = .12$ eV.

2. There is a danger that thermal radiation masks Josephson radiation. The energy for photons at the maximum of the energy density of blackbody radiation as function of frequency is given as the maximum of function $x^3/(e^x - 1)$, $x = E/T$ given by $e^{-x} + x/3 - 1 = 0$. The maximum is given approximately by $x = 3$ and thus $E_{max} \simeq 3T$ (in units $c = 1, k_B = 1$). At physiological temperature $T = 310$ K (37 C) this gives .1 eV, which is slightly below Josephson energy: living matter seems to have minimized the value of Josephson energy - presumably to minimize metabolic costs. Note however that for the thermal energy density as function of *wavelength* the maximum is at $E \simeq 5T$ corresponding to 1.55 eV which is larger than Josephson energy. The situation is clearly critical.

3. One can ask whether also a local reduction of temperature around cell membrane in the fourth phase of water is needed.

   (a) "Electric expansion" of water giving rise to charge separation and presumably creating fourth phase of water is reported to occur [2, 1].

   (b) Could the electric expansion/phase transition to dark phase be adiabatic involving therefore no heat transfer between the expanding water and environment? If so, it would transform some thermal energy of expanding water to work and reduce its temperature. The formula for the adiabatic expansion of ideal gas with $f$ degrees of freedom for particle ($f = 3$ if there are no other than translational degrees of freedom) is $(T/T_0) = (V/V_0)^{-\gamma}$, $\gamma = (f + 2)/f$. This gives some idea about how large reduction of temperature might be involved. If p-adic scaling for water volume by a power of two takes place, the reduction of temperature can be quite large and it does not look realistic.

   (c) The electric expansion of water need not however involve the increase of Planck constant for water volume. Only the Planck constant for flux tubes must increase and would allow the formation of dark proton sequences and the generation of cyclotron Bose-Einstein condensates or their dark analog in which fermions (electrons in particular) effectively behave as bosons (the anti-symmetrization of wave function would occur in dark degrees of freedom corresponding to multi-sheeted covering formed in the process).

# 3 Fourth phase of water and pre-biotic life in TGD Universe

If the fourth phase of water defines pre-biotic life form then the phase transition generating fourth phase of water and its reversal are expected to be fundamental elements of the ordinary metabolism, which would have developed from the pre-biotic metabolism. The following arguments conforms with this expectation.

## 3.1 Metabolism and fourth phase of water

1. Cell interiors, in particular the interior of the inner mitochondrial membrane are negatively charged as the regions formed in Pollack's experiments. Furthermore, the citric acid cycle, (`http://www.en.wikipedia.org/wiki/Citric_acid_cycle`), which forms the basic element of both photosynthesis (`http://www.en.wikipedia.org/wiki/Photo-synthesis`) and cellular respiration `http://www.en.wikipedia.org/wiki/Cellular_respiration`, involves electron transport chain (`http://www.en.wikipedia.org/wiki/Electron_transport_chain`) in which electron loses gradually its energy via production of NADP and proton at given step. Protons are pumped to the other side of the membrane and generates proton gradient serving as metabolic energy storage just like battery. The interpretation for the electron transport chain in terms of Pollack's experiment would be in terms of generation of dark protons at the other side of the membrane.

2. When ATP is generated from ADP three protons per ATP flow back along the channel formed by the ATP synthase molecule (`http://www.en.wikipedia.org/wiki/ATP_synthase`) (perhaps Josephson junction) and rotate the shaft of a "motor" acting as a catalyst generating three ATP molecules per turn by phosphorylating ADP. The TGD based interpretation is that dark protons are transformed back to ordinary ones and possible negentropic entanglement is lost.

3. ATP is generated also in glycolysis (`http://www.en.wikipedia.org/wiki/Glycolysis`), which is ten-step process occurring in cytosol so that membrane like structure need not be involved. Glycolysis involves also generation of two NADH molecules and protons. An open question (to me) is whether the protons are transferred through an endoplasmic reticulum or from a region of ordered water (fourth phase of water) to its exterior so that it would contribute to potential gradient and could go to magnetic flux tubes as dark proton. This would be natural since glycolysis is realized for nearly all organisms and electron transport chain is preceded by glycolysis and uses as input the output of glycolysis (two pyruvate molecules (`http://www.en.wikipedia.org/wiki/Pyruvate`)).

4. Biopolymers - including DNA and ATP - are typically negatively charged. They could thus be surrounded by fourth phase of water and neutralizing protons would reside at the magnetic bodies. This kind of picture would conform with the idea that the fourth phase (as also magnetic body) is fractal like. In phosphorylation the metabolic energy stored to a potential difference is transferred to shorter length scales (from cell membrane scale to molecular scale).

In glycolysis (`http://www.en.wikipedia.org/wiki/Glycolysis`) the net reaction $C_6H_{12}O_6+6O_2 \rightarrow 6CO_2(g) + 6H_2O(l) + heat$ takes place. The Gibbs free energy change is $\Delta G = -2880$ kJ per mole of $C_6H_{12}O_6$ and is negative so that the process takes place spontaneously. Single glucose molecule is theoretized to produce $N = 38$ ATP molecules in optimal situation but there are various energy losses involved and the actual value is estimated to be 29-30. From $Joule = 6.84 \times 10^{18}$ eV and $mol = 6.02 \times 10^{23}$ and for $N = 38$ one would obtain the energy yield .86 eV per single ATP. The nominal value that I have used .5 eV. This is roughly 5 to 8 times higher than $E = ZeV, Z = 2$, which varies in the range .1-.16 eV so that the metabolic energy gain cannot be solely due to the electrostatic energy which would actually give only a small contribution.

In the thermodynamical approach to metabolism the additional contribution would be due to the difference of the chemical potential $\mu$ for cell exterior and interior, which is added to the membrane potential as effective potential energy. The discrepancy is however rather large and this forces the question the feasibility of the model. This forces to reconsider the model of osmosis in the light of Pollack's findings.

## 3.2 Pollack's findings in relation to osmosis and model for cell membrane and EEG

Osmosis (`http://en.wikipedia.org/wiki/Osmotic`) has remained to me poorly understood phenomenon. Osmosis means that solvent molecules move through a semipermeable membrane to another side of the membrane if the concentration of solute is higher at that side. Solute can be water or more general liquid, supercritical liquid, and even gas.

Osmosis is not diffusion: it can occur also towards a higher concentration of water. Water molecules are not attracted by solute molecules. A force is required and the Wikipedia explanation is that solute molecules approaching pores from outside experience repulsion and gain momentum which is transferred to the water molecules.

The findings of Pollack inspire the question whether the formation of exclusion zone could relate to osmosis and be understood in terms of the fourth phase of water using genuine quantal description.

In the thermodynamical model for ionic concentrations one adds to the membrane resting potential a contribution from the difference of chemical potentials $\mu_i$ at the two sides of the membrane. Chemical potentials for the ions parametrize the properties of the cell membrane reducing basically to the properties of the channels and pumps (free diffusion and membrane potential do not entirely determine the outcome).

If the transfer of ions - now protons - through cell membrane is quantal process and through Josephson junctions defined by transmembrane proteins, then the thermodynamical model can at best be a phenomenological parameterization of the situation. One should find the quantum counterpart of thermodynamical description, and here the identification of quantum TGD as square root of thermodynamics in Zero Energy Ontology (ZEO) suggests itself. In this approach thermodynamical distributions are replaced by probability amplitudes at single particle level such that their moduli squared give Boltzmann weights.

### 3.2.1 Simplest Josephson junction model for cell membrane

The first guess is that quantum description is achieved by a generalization of the Josephson junction model allowing different values of Planck constant at magnetic flux tubes carrying dark matter.

1. Josephson junctions correspond microscopically to transmembrane proteins defining channels and pumps. In rougher description entire cell membrane is described as Josephson junction.

2. The magnetic field strength at flux tube can differ at the opposite side of the membrane and even the values of $h_{eff}$ could in principle be different. The earlier modelling attempts suggest that $h_{eff}/h = n = 2^k A$, where $A$ is the atomic weight of ion, is a starting assumption deserving testing. This would mean that each ion resides at its own flux tubes.

   The phase transitions changing the value of $h_{eff}$ could induce ionic flows through cell membrane, say that occurring during nerve pulse since the energy difference defining the ratio of square roots of Boltzmann weights at the two sides of the membrane would change. Also the change of the local value of the magnetic field could do the same.

Consider first the simplest model taking into account only membrane potential.

1. The simplest model for Josephson junction defined by the transmembrane protein is as a two state system $(\Psi_1, \Psi_2)$ obeying Schrödinger equation.

$$i\hbar_1 \frac{\partial \Psi_1}{\partial t} = ZeV\Psi_1 + k_1\Psi_2 \ ,$$

$$i\hbar_2 \frac{\partial \Psi_2}{\partial t} = k_2\Psi_2 \ .$$

   One can use the decomposition $\Psi_i = R_i exp(i\Phi(t)$ to express the equations in a more concrete form. The basic condition is that the total probability defined as sum of moduli squared equals to one:

$R_1^2 + R_2^2 = 1$. This is guaranteed if the hermiticity condition $k_1/\hbar_1 = \overline{k_2}\hbar_2$ holds true. Equations reduce to those for an ordinary Josephson junction except that the frequency for the oscillating Josephson current is scaled down by $1/h_{eff}$.

2. One can solve for $R_2$ assuming $\Phi_1 = eVt/\hbar_{eff}$. This gives

$$R_2(t) = sin(\Phi_0) + \frac{k_1}{\hbar_1} sin(\frac{eVt}{\hbar_1}) \ .$$

$R_2$ oscillates around $sin(\Phi_0)$ and the concentration difference is coded by $\Phi 0$ taking the role of chemical potential as a phenomenological parameter.

3. The counterparts of Boltzmann weights would be apart from a phase factor square roots of ordinary Boltzmann weights defined by the exponent of Coulomb energy:

$$R = sin(\phi_0) = exp(\frac{ZeV(t)}{2T}) \ .$$

Temperature would appear as a parameter in single particle wave function and the interpretation would be that thermodynamical distribution is replaced by its square root in quantum theory. In ZEO density matrix is replaced by its hermitian square root multiplied by density matrix.

### 3.2.2 The counterpart of chemical potential in TGD description

This model is not as such physically realistic since the counterpart of chemical potential is lacking. The most straightforward generalization of the thermodynamical model is obtained by the addition of an ion dependent chemical potential term to the membrane potential: $ZeV \to ZeV + \mu_I$. This would however require a concrete physical interpretation.

1. The most obvious possibility is that also the chemical potential actually correspond to an interaction energy - most naturally the cyclotron energy $E_c = \hbar_{eff} ZeB_{end}/m$ of ion - in this case proton - at the magnetic flux tube. Cyclotron energy is proportional to $h_{eff}$ and can be rather large as assumed in the model for the effects of ELF em fields on brain.

2. This model would predict the dependence of the effective chemical potential on the mass and charge of ion for a fixed value of on $h_{eff}$ and $B_{end}$. The scales of ionic chemical potential and ion concentrations would also depend on value of $h_{eff}$.

3. The model would provide a different interpretation for the energy scale of bio-photons, which is in visible range rather than infrared as suggested by the value of membrane potential.

   The earlier proposal [**?**]qualia was that cell membrane can be in near vacuum extremal configuration in which classical $Z^0$ field contributes to the membrane potential and gives a large contribution for ions. The problematic aspect of the model was the necessity to assume Weinberg angle in this phase to have much smaller value than usually. Furthermore, for proton the $Z^0$ contribution is negligible in good approximation so that this model does not explain the high value of the metabolic energy currency.

4. The simplest model the communications to magnetic body rely on Josephson radiation whose fundamental frequency $f_J$ is at resonance identical with the cyclotron frequency $f_c(MB)$ at particular part of the flux tube of the magnetic body:($f_c(MB) = f_J$. $f_c(MB)$ corresponds to EEG frequency in the case of brain and biophotons are produced from dark EEG photons as ordinary photons in phase transition reducing $h_{eff} = n \times h$ to $h$.

In the modified model the sum $f_c + f_{J,n}$ ($f_{J,n} = E_J/n \times h$) of $h_{eff}$-independent cyclotron frequency and Josephson frequency proportional to $1/h_{eff}$ equals to cyclotron frequency $f_c(MB)$ at "personal" magnetic body varying slowly along the flux tube: $f_c + f_{J,n} = f_c(MB)$. If also the variation of $f_J$ assignable to the action potential is included, the total variation of membrane potential gives rise to a frequency band with width roughly

$$\frac{\Delta f}{f} \simeq \frac{2f_{J,n}}{f_c + f_{J,n}} = \frac{2f_{J,1}}{nf_c + f_{J,1}} \quad .$$

If dark photons correspond to biophotons the energy is of cyclotron photon is in visible and UV range one has $nf_c = E_{bio}$ and

$$\frac{\Delta f}{f} \simeq \frac{2ZeV}{E_{bio} + ZeV} \quad .$$

The prediction is scale invariant and same for all ions and also electron unless $E_{bio}$ depends on ion. For $eV = .05$ eV, $Z = 1$, and $E_{bio} = 2$ eV ($f \simeq 5 \times 10^{14}$ Hz) one has $\Delta f/f \sim .1$ giving 10 per cent width for EEG bands assumed in the simpler model.

If this vision is on the correct track, the fundamental description of osmosis would be in terms of a phase transition to the fourth phase of water involving generation of dark matter transferred to the magnetic flux tubes. For instance, the swelling of cell by an in-flow of water in presence of higher concentration inside cell could be interpreted as a phase transition extending exclusion zone as a process accompanied by a phase transition increasing the value of $h_{eff}$ so that the lengths of the flux tube portions inside the cell increase and the size of the exclusion zone increases. In general case the phase transitions changing $h_{eff}$ and $B_{end}$ by power of two factor are possible. This description should bring magnetic body as part of bio-chemistry and allow understanding of both equilibriumion distributions, generation of nerve pulse, and basic metabolic processes leading to the generation of ATP.

### 3.3 Which came first: metabolism or cell membrane?

One of the basic questions of biology is whether metabolism preceded basic biopolymers or vice versa. RNA world scenario assumes that RNA and perhaps also genetic code was first.

1. The above view suggests that both approaches are correct to some degree in TGD Universe. Both metabolism and genetic code realized in terms of dark proton sequences would have emerged simultaneously and bio-chemistry self-organized around them. Dark proton sequences defining analogs of amino-acid sequences could have defined analogs of protein catalysts and played a key role in the evolution of the metabolic pathways from the primitive pathways involving only the phase transition between ordinary water and fourth phase of water.

2. There is very interesting article [4] reporting that complex metabolic pathways are generated spontaneously in laboratory environments mimicking hot thermal vents. Glycolysis and pentose phosphate pathway were detected. The proposal is that these pathways are catalyzed by metals rather than protein catalysts.

3. In standard biology these findings would mean that these metabolic pathways emerged before basic biopolymers and that genetic code is not needed to code for the metabolic pathways during this period. In TGD framework dark genetic code [7, 8] would be there, and could code for the dark pathways. Dark proton strings in one-one correspondence with the amino-acid sequences could be responsible for catalysts appearing in the pathways. Only later these catalysts would have transformed to their chemical counterparts and might be accompanied by their dark templates. One cannot even exclude the possibility that the chemical realization of the DNA-aminoacid correspondence involves its dark analog in an essential manner.

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**Article**

# Morphogenesis, Morphostasis and Learning in TGD Framework

Matti Pitkänen [1]

**Abstract**

According to Michael Levin, concerning morphogenesis and morphostasis the basic challenge is to understand how the shape of the organism is generated and how it is preserved. The standard local approach based on belief on genetic determinism does not allow one to answer these questions satisfactorily.

The first approach to this problem relies on a self-organization paradigm in which the local dynamics of cells leads to large scale structures as self-organization patterns. In TGD framework 3-D self-organization is replaced with 4-D self-organization (the failure of strict determinism of the classical dynamics is essential motivating zero energy ontology (ZEO)). One can speak about 4-D healing: expressing it in somewhat sloppy manner, the space-time surface serving as a classical correlate for the patient is as a whole replaced with the healed one: after the 4-D healing process the organism was never ill in geometrical sense! Note that in quantal formulation one must speak of quantum superposition of space-time surfaces.

Second approach could be seen as computational. The basic idea is that the process is guided by a template of the target state and morphogenesis and healing are computational processes. What Levin calls morphogenetic fields would define this template. It is known that organisms display a kind of coordinate grid providing positional information that allows cells to "decide" about the profile of genetic expression. In TGD framework magnetic body forming coordinate grid formed from flux tubes is a natural candidate for this structure. They would also realize topological quantum computation (TQC) with basic computational operations realized at the nodes of flux tubes to which it is natural to associate some biological sub-structures.

The assumption about final goal defining a template can be argued to be too strong: much weaker principle defining a local direction of dynamics and leading automatically to the final state as something analogous to free energy minimum in thermodynamics might be enough. Unfortunately, second law is the only principle that standard physics can offer. Negentropy Maximization Principle (NMP) provides the desired principle in TGD framework. Also the approach of WCW spinor field to the maximum of vacuum functional (or equivalently that of Kähler function) gives a goal for the dynamics after the perturbation of the organism causing "trauma". If Kähler function is classical space-time correlate for entanglement negentropy, these two views are equivalent.

TGD thus suggests an approach, which could be seen as a hybrid of approaches based on self-organization and computationalism. The magnetic body becomes the key notion and codes also for learned behaviors as TQC programs coded by the braiding of flux tubes. The replication of the magnetic body means also the replication of the programs behind behavioral patterns (often somewhat misleadingly regarded as synonymous with long term memories): both structure and function are replicated. This hypothesis survives the killer tests provided by the strange findings about planaria cut into two and developing new head or tail while retaining its learned behaviors: the findings indicate that behavioral programs are preserved although planaria develops a new brain.

## 1 Introduction

Michael Levin and his collaborators have been working with fascinating topics including fundamentals of long term memory and morphogenesis and morphostasis [**?**, 2, 4].

There are two articles of interest that his team has published about morphogenesis and morphostasis. The first article [**?**] (`http://www.futuremedicine.com/doi/pdf/10.2217/rme.11.69`) seems to be directed to general audience and has the title "The wisdom of the body: future techniques and approaches

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to morphogenetic fields in regenerative medicine, developmental biology and cancer". The second article [2] titled "Morphogenetic fields in embryogenesis, regeneration, and cancer: Non-local control of complex patterning" (`http://www.ncbi.nlm.nih.gov/pubmed/22542702`) is more technical. The basic notion is the morphogenetic field, an old notion, which has not yet captured the attention of mainstream biologists who have worked mainly with the attempt to reduce biology to the genetic code. Sheldrake's work [3] with this concept has drawn special attention, but there are many other workers in the field.

The third article [4] by Levin and Shomrat has the title "An Automated Training Paradigm Reveals Long-term Memory in Planaria and Its Persistence Through Head Regeneration" (`http://mechanism.ucsd.edu/teaching/f13/cs200/Levin_longterm_learning_planaria_2013.pdf`), and its findings challenge the belief that brain is the only seat of memories.

According to Levin, concerning morphogenesis and morphostasis the basic problem is to understand how the shape of the organism is generated and how it is preserved [2]. The standard local approach based on genetic determinism does not allow one to answer these questions satisfactorily. There is paradigm based on self-organization in which the local dynamics of cells leads to large scale structures as self-organization patterns. The Game of Life is an elegant example about how a simple cellular automaton can lead to surprisingly complex behaviors: actually the Game of Life is universal Turing computer. The problem of this approach is that it is very difficult to deduce the local rules governing the behavior of basic units (whatever they are) in practice- especially so if they are also dynamical.

The second approach could be seen as computational, with the basic idea being that the process is guided by a template of the target state. Morphogenetic fields would define this template. The assumption about final goal can be argued to be too strong: much weaker principle defining a local direction of dynamics and leading automatically to the final state as something analogous to free energy minimum in thermodynamics might be enough. Unfortunately, second law is the only principle that standard physics can offer.

These problems are also very relevant for medicine [**?**] since morphogenesis, morphostasis, and cancer all involve actively replicating cells: the difference is that in cancer the control and long scale coordination of the process fails and it becomes a purely local process. Levin refers to cancer as geometric disease and it seems that this correction contains seed of truth.

These topics are also interesting from the point of view of TGD inspired quantum biology and consciousness. There are several new notions to be tested.

1. The new view about time and quantum physics implied by zero energy ontology (ZEO).
   In TGD framework the notion of preferred extremals as 4-D space-time sheet analogous to Bohr orbit, for which strict determinism of dynamics fails, replaces 3-space as basic unit. One can understand self-organization process in 4-D sense rather than 3-D sense: geometric time evolution would be replaced by subjective time evolution by quantum jumps. This could resolve the basic difficulty of the ordinary self-organization paradigm.

2. The new view about information relying on the notion of negentropic entanglement and Negentropy Maximization Principle (NMP).
   NMP could be the principle guaranteeing local positive goal making healing and evolution basic processes of Nature. In particular, the development of shape and shape preservation of organisms could involve NMP in essential manner. Also the approach of WCW spinor field to the maximum of vacuum functional (or equivalently that of Kähler function) gives a goal for the dynamics after the perturbation of the organism causing "trauma". If Kähler function is classical space-time correlate for entanglement negentropy, these two views are equivalent.

3. The notion of magnetic body (MB) carrying dark matter as phases with large value $h_{eff}$ of Planck constant making living matter a macroscopic quantum system.
   Magnetic body provides a tool kit of quantum mechanisms (phase transitions changing the value of $h_{eff}$ and thus the length of flux tube, reconnections changing the topology of magnetic Indra's net, and 1-braiding of flux tubes 3-space and 2-braiding of their orbits in 4-D space-time). Magnetic body

defining a kind of coordinate grid is a good candidate for the TGD counterpart of morphogenetic field serving as a template for the developing organism. It would also give rise to topological quantum computation (TQC) type activities.

The coordinate grid formed by flux tubes defines 3-D topological quantum computer program and the natural assumption is that learned behaviors are coded by the magnetic body as TQC programs. If replication of magnetic body accompanies the replication of DNA, cell, and even planaria (say), the learned behaviors are also replicated.

4. There are additional mechanisms: super-conductivity made possible by large values of $h_{eff}$, Josephson radiation from Josephson junctions transforming voltages to frequencies inducing resonant transitions, and radiation consisting of dark photons and inducing cyclotron transitions serving as a basic control and coordination tools. The radiation could be generated as analog of cyclotron radiation by quantum phase transitions at magnetic flux tubes, by Josephson junctions, and by microtubules serving as quantum antennas. Frequency modulation is an excellent candidate for the representation of information: something analogous to whale song would be in question.

All these new notions seem to be highly relevant for the understanding of these experimental findings by Levin's group, which appear to challenge the standard biological model. It would seem that 1. computational aspects (TQC), 2. self-organization but in 4-D sense, 3. the notion of template identified in terms of flux quanta of topologically quantized classical em fields, and 4. the local direction of quantum dynamics defined by NMP are involved rather than single principle.

# 2 The notion of time in TGD framework

The TGD based notion of time is very relevant in attempts to understand the findings about the memory of planaria and metamorphosis and metastasis challenging the standard thinking.

## 2.1 The general picture based on zero energy ontology

1. In TGD framework one must make a distinction between subjective time and geometric time: usually these times are identified. Subjective time has state function reduction/quantum jump as chronon. Geometric time is the time of physicists and corresponds to one coordinate for space-time surface or imbedding space. General Coordinate Invariance implies that it is not unique but that there are very natural choices of it dictated by symmetries.

2. In zero energy ontology (ZEO) physical state is replaced with a pair of positive and negative energy states at opposite boundaries of $CD \times CP_2$, where $CD$ is causal diamond identified as the intersection of future and past directed light-cones. I will talk about $CD$ in the sequel without bothering to write "$\times CP_2$". In ordinary positive energy ontology zero energy states correspond to initial and final states of physical events. The space-time surfaces having their ends at the boundaries of $CD \times CP_2$ are space-time correlate for the physical time evolution between the initial and final states. $CD$:s form a fractal hierarchy since the distance between the tips of $CD$ is assumed to be integer multiple of $CP_2$ time. Also Lorentz transforms and translates of $CD$ are allowed so that it makes sense to speak about moduli space of $CD$:s parametrized by the positions of its tips. It is also possible to have "wave functions" in this moduli space. This is very relevant for understanding what the flow of time corresponds physically.

   One can say, that due to the failure of strict determinism the 4-D space-time surface connecting boundaries of CD becomes the basic dynamical unit as far as subjective time development is considered. The superposition of space-time sheets is recreated again and again in quantum jump so that "quantum average" space-time - also its past - changes.

One can speak about 4-D body, brain, even society. For instance, the recall of long term memories could be communications with the geometric past using time-reversed signals reflecting back from the brain of the geometric past: essentially seeing in time direction would be in question. One can even consider healing process in which the healthy state result also in the geometric past!

A new view about long term memories emerges: the brain of geometric past can serve as the seat of memories. This applies to genuine conscious memories such as episodal memories but not to learned behaviors.

3. Zero energy ontology (ZEO) implies a new view about state function reduction and about how the experience about flow of time and its arrow emerge. The state function reductions can occur at either boundary of CD but also repeatedly at the same boundary. The wave function in the moduli space of $CD$:s with fixed "lower boundary" changes in each repetition of state function reduction although the positive energy state at "lower" boundary remains unchanged. In ordinary quantum measurement theory nothing would change. This change gives rise to the experience about flow of time. The change is that the average temporal distance between the fixed tip of "lower" boundary and the tip of the "upper boundary" increases: essentially dispersion leading to the decay of wave packet is in question. It is analogous to diffusion in which distance of the diffusing particle from the initial position gradually increases. One can quantify this by introducing the average increase of average geometric time in single state function reduction highly relevant for understanding time experience.

4. Couplings between several widely different length and time scales - say molecular length scale and the scale of biological body - seems to be needed in order to understand morphogenesis - at least as something implied by cell level events. TGD assigns to each particle its CD. The scale of the smallest $CD$ assignable with the particle characterized by given p-adic prime $p$ corresponds to its secondary p-adic length/time scale. For electron this time scale is .1 seconds defining a fundamental biorhythm: as a length scale it corresponds to the circumference of Earth.

5. One of the basic predictions of TGD is the failure of strict determinism of the time evolution for space-time surfaces. The interpretation is as a space-time correlate of quantum non-determinism. The reason is the huge vacuum degeneracy of Kähler action. Any space-time surface with vanishing induced Kähler form which is essentially Maxwell field, is vacuum extremals. Mathematically this huge degeneracy is like gauge degeneracy but implies 4-D (very essential distinction from standard view) spin glass degeneracy: there is huge number of different preferred extremals obtained as deformations of the vacuum extremals. This means non-determinism.

   So called vacuum functional tells the probability of one particular preferred extremal and one can imagine plotting it as a functional of the extremal. The graph would be a fractal analogous to free energy landscape of spin glass: there are minima inside minima inside.... - now only the minima are replaced with maxima.

## 2.2 What healing in 4-D sense could mean?

The TGD view about time allows to imagine what 4-D healing could mean.

1. Suppose that one performs a deformation of the space-time sheet representing healthy organism. The system suffers "traumatic injury" in 4-D sense but only inside the $CD$ in question. Classical non-determinism makes also possible the localization of 4-D deformation to a finite region of space-time rather than extending to infinite future. State functions repeatedly replace the zero energy state with a new one and it can gradually end up back to the maximum of Kähler function unless the deformation was not too large or unless it is stuck to a different local maximum. If it ends up with an original maximum, one can say thata complete 4-D healing took place. Also the biological

body of geometric past is healthy! In geometric sense the system was never sick! This mechanism requires no knowledge about healthy state and no algorithm for getting back into healthy state. Nature takes care of healing.

2. The sticking to a local maximum of vacuum functional can prevent getting to the ideal healthy state. This can be avoided by the same mechanism as in annealing, which serves as a metaphor in numerics for a process in which one finds deep minimum of function by "kicking" the system now and then to get out of local minimum. Now the "kicking" would be stimulus deforming the system but not too much.

3. One expects that also Negentropy Maximization Principle (NMP) is closely involved with healing since healing should involve the regaining of the lost information. NMP states that the total negentropy increases in state function reductions and is apparently the opposite of second law: the negentropies in question are however not the same thing and NMP implies second law for ordinary entanglement. The implication is that the potentially conscious information associated with the negentropic entanglement (with identical entanglement probabilities for entangled states) tends to increase and negentropic entanglement can be only transferred to another system or transformed to a new form, but cannot disappear. Negentropically entangled systems would define kind of Akashic records storing potentially conscious information transformed to conscious information in interaction of free quantum measurement. The approach towards maximum of negentropy and maximum of vacuum functional are expected to correspond closely to each other. Quite concretely, NMP could help to understand why the pieces of planaria split into two parts develop head and tail.

4. Clearly, NMP and the approach to the maximum of Kähler function both define candidates for the principles giving rise to same outcome as the morphogenetic field is expected to give. A possible interpretation is that the approach to the maximum of Kähler function is the space-time correlate for NMP: Kähler function defined as Kähler action for preferred extremal could be regarded as classical negentropy.

## 2.3 The flow and arrow of time in ZEO

The TGD based vision about how the arrow of geometric time has developed slowly and I do not dare claim it be fully developed and final [9].

1. What seems clear now is the decisive role of ZEO and hierarchy of $CD$s, and the fact that the quantum arrow of geometric time is coded into the structure of zero energy states to a high extent. The still questionable but attractively simple hypothesis is that U matrix relates two zero energy state basis with opposite quantum arrows of geometric time: is this assumption really consistent with what we know about the arrow of time? The second basis is always state function reduced.

   If this is the case, the question is how the relatively well-defined quantum arrow of geometric time implies the experienced arrow of geometric time. Should one assume the arrow of geometric time separately as a basic property of the state function reduction cascade or more economically does it follow from the arrow of time for zero energy states?

2. The state function reductions occurs at either of the two boundaries of CD. If the reduction occurs at given boundary is immediately followed by a reduction at the opposite boundary, the arrow of time alternates: this does not conform with intuitive expectations: for instance, this would imply that there are two selves assignable to the opposite boundaries!

   It took time to realize that zero energy states must be de-localized in the moduli space $CD$s (the size of $CD$ plus discrete subgroup of Lorentz group defining boosts of CD leaving second tip invariant). One has quantum superposition of $CD$s with difference scales but with fixed upper or lower boundary belonging to the same light-cone boundary after state function reduction. In

standard quantum measurement theory the repetition of state function reduction does not change the state but now it would give rise to the experienced flow of time. Zeno effect indeed requires that state function reductions can occur repeatedly at the same boundary. In these reductions the wave function in moduli degrees of freedom of $CD$ changes. This implies "dispersion" in the moduli space of $CD$s experienced as flow of time with definite arrow.

3. This approach codes also the arrow of time at the space-time level: the average space-time sheet in quantum superposition increases in size as the average position of the "upper boundary" of $CD$s drifts towards future state function reduction by state function reduction.

4. In principle the arrow of time can temporarily change but it would seem that this can occur in very special circumstances and probably takes place in living matter. Phase conjugate laser beam is a non-biological example in this respect. Memory recall [14] would involve the change of arrow of geometric time for a subsystem corresponding to the signal propagating to the geometric past and reflecting back.

This vision involves minimal number of assumptions and is the most convincing one found hitherto and the challenge is to invent objections in order to develop it in more detail.

# 3 The notions of magnetic body and dark matter hierarchy

The notion of magnetic body is central in TGD. The TGD inspired model trying to explain the findings about microtubules by Indian research group led by Anirban Bandyopadhyay lead to rather interesting speculations about the role of magnetic flux tubes and a more precise speculative view about how living system could act as topological quantum computer [15][16].

*Remark*: Magnetic body is somewhat misleading term since a simple deformation implies that magnetic flux quanta carry helical magnetic and electric fields along the flux tube axis.

## 3.1 Could magnetic body define coordinate grids making possible topological quantum computation?

If the claims of Indian research group led by Anirban Bandyopadhyay are true, one can say that microtubules are macroscopically quantum coherent systems at physiological temperatures. In his Youtube talk Anirban Bandyopadhyay (`https://www.youtube.com/watch?v=VQngptkPYE8`) [5] discussed an identification of conduction pathways different from that of Penrose and Hameroff. In [8] Gosh, Sahu, and Bandyopadhyay argue for evidence for massive global synchronization in brain and claim that experimental findings support the Penrose-Hameroff theory. In the article "Atomic water channel controlling remarkable properties of a single brain microtubule: correlating single protein to its supramolecular assembly" [6] it is reported that ordered water inside microtubule is necessary for the conduction inside microtubule.

According to the same article the tubulins inside microtubule has same energy levels in chemical energy range as isolated tubulins, which suggests that the mechanism binding tubulins to form MT is not chemical. In the article "Multi-level memory-switching properties of a single brain microtubule" [7] it is reported that the hysteresis curve for current along MT as function of voltage is ideal square curve meaning that there is no dissipation involved with the change of the current direction. This would make MT as an ideal memory device. Whether Penrose/Hameroff have in mind the use of current direction as qubit remains unclear. In video talk Bandyopadhyay refers also to these results.

I have considered the general proposal discussed in video lecture in the article [15] [16]. The findings reported in the talk give support for the general TGD inspired view about TQC and allow rather detailed model in the case of microtubules. The idea is that flux tubes form a 2-D coordinate grid consisting of parallel flux tubes in two different directions: the guess that they could consist of helical Fibonacci

flux tubes and their mirror images is not however convincing. Crossing points would be associated with tubulins and the conformational state of tubulin could define a bit coding whether the braid strands defining coordinate lines are braided or not (swap or not). In this manner any bit pattern at microtubule defines a particular TQC program. If also conformations are quantum superposed, one has "quantum-quantum computation". It however seems that conformation change is irreversible chemical reaction [**?**] so that this option is not feasible.

The TGD inspired modification of the proposal in terms of flux tube coordinate grids making possible TQC architectures with tubulin dimers defining bits defining in turn TQC program looks more plausible to me. Coordinate grids can be fixed on the basis of the experimental findings and there are 8 of them. The interpretation is in terms of different resolutions. The grids for A and B type lattices are related by $2\pi$ twist for the second end of the basic 13-unit for microtubule. An attractive interpretation for the resonance frequencies is in terms of phase transitions between A and B type lattices. If A type lattices can be generated only in phase transitions induced by AC stimulus at resonance frequencies, one could understand their experimental absence, which is strong objection against the Penrose-Hameroff model.

This would fit very nicely with the general vision about frequencies as passwords inducing not only directed attention but activities in target - also TQCs! The increase of Planck constant could be associated with the phase transition to A-phase making possible high $T_c$ dark super-conductivity for which evidence is observed! One can even deduce estimates for $h_{eff}/h = n$ if one requires that AC photons have energy above thermal threshold: $n = h_eff/h = f_{visible}/f_AC$ would be the estimate. For bio-photon energies one would obtain something like $n \simeq 10^8 - 10^9$, which pops up in different contexts in TGD framework.

This picture generalizes in the fractal universe of TGD. One can form layers of 2-D coordinate grids and connect them by vertical flux tubes to obtain 3-D grid defining TQC. The brain is known to have grid-like architecture and neurons could by quantum computation produce bit/qubit defining swap or not/superposition of swap and not-swap for a larger scale TQC. One would have fractal of TQCs.

A further idea is that the TQC based on 1-braids generalizes in a natural manner to 2-braid TQC in TGD framework (for 2-braids in 4-D space-time see [12]. The knotting occurs for string world sheets defining the orbits of braid strands - say magnetic flux tubes idealized to strings. In the case of microtubules this option suggests itself: the emergence of MTs could have meant emergence of 2-braid TQC and the increase of abstraction level in the information processing.

In the node of 3-D coordinate grid either reconnection of two flux tubes can occur or not: this is coded by one bit. Second bit tells which tube goes over which tube in the plane defined by two tubes. There are three planes of this kind corresponding to xy,xz, and yz planes, and therefore 6 bits altogether. Could genetic codon containing 6 bits of information code for what happens in the node of the grid. Note that 2-braiding is possible only if string worlds sheets "live" in 4-D space-time: for super strings living in higher-D space-time this is not possible.

This kind of 3-D TQC could be responsible for the those aspects which are nearest to computation. One must be however very cautious with the word "computation". Space-like braiding seems to be very natural for storing memories [11] in braiding patterns ad bit patterns would characterize the 2-braiding associated with the coordinate grid but from this it is long way to computation in the usual sense of the word.

## 3.2 Flux tube grids and coding of position information

In metamorphosis and metastasis the basic problem is how the information about position is coded. How cell does know its position in organism? This is necessary for the cell to express its genome in appropriate manner: for instance, gene expression of neuron is quite different from that of muscle cell? According to the article of Levin [2] organisms seem to have developed kind of coordinate grids to realize this purpose. For instance, simple coordinate transformations seem to related the grids of nearby species to each other. Magnetic flux tubes could be basic building bricks of these grids and at the same time the realization of morphogenetic fields. The coordinate value could be coded by the value of local magnetic field strength varying along the flux tube. By flux conservation this would correspond to the thickness of the flux tube

or equivalently to cyclotron frequency. Radiation at cyclotron frequencies would act resonantly only at points at which the resonance condition is satisfied.

Voltages associated with Josephson junctions define Josephson frequencies which could be essential for bio-control and coordination via the resonance mechanism allowing selective activation of biological programs. According to [2], the values of transmembrane potentials in frog embryo correlate with the formation of the face of Zenopus laevis embryos. The lipid layers of cell membrane are proposed to form Josephson junction (at microscopic leve the ionic channels and pumps associated with them).

Fractality suggests that nearby cell membranes - say those associated with epithelial sheets - could also form Josephson functions as fractal considerations. Gap junctions could provide a microscopic realization of these Josephson junctions. If so, then the large $h_{eff}$ Josephson photons with frequencies determined by transmembrane potential ($f = ZeV/h_{eff}$) could induce in resonant manner activities in precisely defined positions of the magnetic coordinate grid. The radiation at correct frequency would serve as kind of password allowing to initiate a biological program. For instance, in the case considered above they could initiate the generation of the face. The errors in development could be due to various birth defects could be due to external electric perturbations. Maybe, some day even the correction of these errors might be possible by using properly tuned electric voltages.

### 3.3 What happens to the magnetic body of planaria cut into two pieces?

When planaria is cut to two pieces, second pieces regenerates head and second regenerates tail. Also when one takes second cell away from 2-cell embryo, the remaining cell becomes a full organism rather than only half of it. If there is a template for the formation of organism, then also this template must split in two. As a matter of fact, I have proposed that the magnetic body of the cell decomposes to two in cell division and that this splitting actually guides the cell division.

The fractality of TGD Universe suggests similar splitting in all scales. The vertex of Feynman diagram representing the decay of photon to electron-positron pairs provides an ultra-simplified version of the replication. In TGD framework the lines of Feynman diagrams are replaced with 4-D orbits of 3-D surfaces (or by holography 3-D orbits of 2-D partonic surfaces) and this is true in all scales. Therefore the idea that magnetic body replicates would reduce one of the most mysterious processes of living matter to generalization of fundamental physics. Note that string models do not allow analogs for the vertices of Feynman diagrams, they are possible only in TGD framework.

The idea about magnetic body defining a coordinate grid serving as a counterpart of morphogenetic field or as template able to guide the development of the organism becomes central. It seems that even individual cell - perhaps even DNA - should contain microscopic representation of some topological aspects of the adult organism. This conforms with the notion of holography and is consistent with the central role of genes. Magnetic body with large $h_{eff}$ being very multi-sheeted structure analogous to covering space could provide this representation. With inspiration coming from Hox genes and from deep ignorance about genetics I proposed that the magnetic body of DNA and even DNA in some rough sense could be homologous to the biological body [13].

Can one test this hypothesis? It is also possible to isolate the cells of planaria during the development of new head by closing gap junction connections between them for about 48 hours [2]. The outcome is planaria with two heads. As if the isolation of two cells which should have belonged to the head of planaria had induced splitting of the magnetic body assignable to the head to two so that the outcome was too separate heads. One can however split the two-headed planaria again and the headless part develops now two heads! If the two headed magnetic body replicates, the outcome follows as a prediction.

## 4 Is brain really the seat of memories?

Levin and Shomrat tell about experiments demonstrating that brain is not necessarily the seat of memories as usually assumed. Planaria have brains and they are able to learn and remember. When planaria is split,

the pieces develop head and tail. In the experiments planaria are taught some skill and after that split into two pieces. According to [4], there is evidence that the part of planaria with new head remembers the skill. From this one can conclude that brain is not the only possible seat of memories.

Before continuing, it should be emphasized that memories are now defined as learned behaviors - assumed to reduce basically to conditionings of neurons at the motor areas of brain so that they generate certain motor response to sensory input. In TGD framework memories are understood as genuine conscious memories about events of past and involve communication with the geometric past.

One can imagine several explanations for the findings about the memory preservation. The computationalist possibility is that memories are transferred at least temporarily to the body of planaria and then back to the new head. This does not look biologically feasible.

Three TGD inspired explanations - corresponding to the identification of the brain of the geometric past, biological body, or magnetic body as the seat of memories - are considered.

1. Memories - identified as conscious experiences analogous to episodal memories rather than learned skills - could reside in the old brain or biological body or even magnetic body of the planaria with new head in the geometric past and accessed by negative energy signals which are time reflected from it. This explanation is not natural when memories are identified as learned skills, which in the ideal case are un-conscious behaviors.

2. In TGD Universe entire body and brains could form a hologram-like structure [10] and the information about body is transferred to the new brain. This would be like hologram completion. TGD indeed suggests strongly that entire body is conscious. For instance, the sensory organs carry the primary sensory qualia, one could circumvent the problem caused by the fact that neural circuits seem the same in all sensory areas. Cortex - maybe entire brain - would build standardized cognitive mental images, give them names, and entangle them with sensory qualia at sensory organs.

   Phantom leg is the basic objection against this view but new view about time allows to circumvent it: the seat for the experience about pain in phantom leg is in geometric past when the leg still existed. Note that here memories are not learned skills but memories about genuine events in geometric past.

   Second TGD inspired explanation for phantom leg would be it is that phantom leg corresponds to the magnetic body part: it is however not clear whether the sensation of pain even other bodily sensations can be located at magnetic body.

3. The long term memories of planaria restricted to learned behaviors could be represented also at the magnetic rather than biological body. Quantum computationalist would agree with this idea since learned skills would be very naturally TQC programs realized at the coordinate grid formed by the magnetic flux tubes. If magnetic body is replicated as planaria is cut to two pieces, also the TQC programs are replicated. DNA as TQC proposal [11] assigns these programs to the braids defined by flux tubes assumed to connect DNA nucleotides or codons with the lipids of the lipid layers of the nuclear or cell membranes.

4. Could the state function reduction sequence implying 4-D self-organization driven by NMP lead to and asymptotic state in which also the skills learned in possession of old brain are possessed. As a matter fact, this aspect is certainly present since the replica of the magnetic body of planaria brain must give rise to original biological brain. TQC programs for the skills would be however present from the beginning.

The second option looks like the most plausible explanation since allows to understand the replication of not only organism but also the TQC programs defining behavior repertoire.

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**Exploration**

# The Essence of Linguistic & Wave Genetics in Theory and Practice

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## ABSTRACT

A new branch of biology and medicine, linguistics-wave-enetics, is proposed. This new branch will be based on the understanding of the genetic apparatus as Quantum Biocomputer (QB) with the characteristic elements of consciousness and thought. The main principles of QB are based on holographic and quantum non-locality. The pilot model of the artificial world is created with laser-based technologies. QB will be capable of the following functions of bio-computation: a) reading wave of genetic information from chromosomes and cell tissue; b) scanning for converting (recording information) laser photons modulated wide-spectrum electromagnetic radiation (mShEI) keeping received primary photon of genetic information; c) wave broadcasting genetic information at macro distances; d) the introduction of genetic information in mShEI form the body of the recipient in its intracellular water; and e) programmable managment and corrections of metabolism, physiology of the recipient, such as a patient or the old man. This new branch is theoretically substantiated and experimentally demonstrated in our research.

**Key Words:** linguistic, wave genetics, theory, practice, quantum bio-computation.

The current understanding of genetic code may be incomplete when it comes to inheritance and regulations of protein synthesis. This is due to the way it treats the role of the second half of the codons. The 1st 32 codons have been long understood. In the second half of the codons, some codons are not unique, i.e., same codons may encode different amino acids and the stop position in the biosynthesis of proteins. This would imply that the ribosome could err in selecting amino acids and stop positions. However, ribosomes are not wrong. This is the dilemma in the current understanding.

However, in reality there is uniqueness. Why is the ribosome not wrong? The answer is found in the context of mRNA. It is the understanding of the mRNA a marketing context of the protein-synthesizing system allows a biological system to select the exact semantics codon-homonyms and, accordingly, an amino acid, and (or) the stop position. If context is understood to mean the genetic apparatus has a quasi (almost) consciousness, it out on others, meaning, the vectors of the protein code and the ability to adapt organisms to changing environmental conditions in the course of evolution and the ability to turn out pools of test proteins. For a long time, context-oriented role codon-homonyms have been ignored, leading to serious consequences in the use of so-called "transgenic engineering."

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With the development of biotechnology for introducing foreign genes (transgenes) into the chromosomal DNA, it is possible to very quickly produce genetically modified foods supply. The problem is the creation of dangerous synthetic cells, the so-called "Cynthia," the artificial genome. In such a counterproductive genetic real problem homonymy half codons suddenly acquired a formidable character. Misunderstanding and even ignoring strategic role of the codon-homonyms has already led to the protein pathogenicity genetically modified food, sometimes leading to cancer, the strongest allergies. Now revealed uncontrolled aggression "Cynthia" used for the disposal of oil pollution in the Gulf of Mexico, the aggression against the whole living, including humans (called "blue plague").

There is another strategic issue. Do we understand the basic principles of embryo formation in the adult body? No, they are purely descriptive, and, eventually, wrong. Mechanisms of differentiation of stem cells are not understood at the present.

Dynamic space-time structure of the developing embryo is a gradient wavefronts genomic polarization holograms created by liquid crystals of DNA cholesteric chromosome continuum in cell-tissue areas. Chromosomes which are sources of coherent light (250 -800nm) are required to read genomic holograms. The second strategic organization of the embryo to the adult organism is a quasi-verbal structure of protein texts translated from the body language of the primary DNA-RNA texts. That is, genome not only thinks but shows a holographic scheme and provides text (protein) comments. The third strategic organization is instant in time and space co-ordination of all cells and their genomes through quantum non-locality, i.e., teleporting the wave of genetic-metabolic information between hundreds of billions of cells that form the body.

Are there experimental support of the above? Yes, to a certain extent - the PhD thesis research of Jenny Jiang Kang (Khabarovsk), Dr. Budagovsky (Michurinsk), Dr. A.B.Burlakova (MSU) plus our own experiments. Further, Luc Montagnier and his team have also done important work which confirmed our data on the transmission of genetic wave data by the macro range. Montagnier’s experiments were much simpler but no less significant.

In view of the importance of the work of Luc Montagnier, give it a reasonable evaluated in comparison with our own, earlier, research in this area. Luc Montagnier penetrated into the area of linguistics-wave genetics in science which was launched by Russian biologists Gurvitch and Lyubischevym Beklemishev in the 20's - 40's of last century.

Why the results of Luc Montagnier (and our in significantly more advanced version) demonstrating electromagnetic broadcast DNA water structure, including the structure of intracellular water in vivo are important?

In medicine a critical situation in terms of non-use of information of huge reserves of "junk" DNA, respectively, now real opportunities LCG. The reason - the long-term and continued misunderstanding of the main strategic principles Information Center man - his genetic apparatus, which is responsible not only inheritance, but carries a key regulation of metabolism and physiological functions, up to the level of thought and consciousness. The main problem – in misunderstanding, ignoring the contradictions of the genetic code in the Model (CIM). In fact, it is a blunder not realizing or rather, ignoring the importance of ambiguity coding amino acids of

the protein code. This led, as mentioned, the so-called transgenic engineering, gave the main result, cheap genetically modified foods. It threatens to collapse all life on Earth.

The second consequence fallibility of CIM - the inability of medicine to treat major diseases - cancer, AIDS, tuberculosis, failure to extend the active life of the people and up to 200 years. It can and must make a new branch of biology and medicine - linguistics-Wave Genetics. It is based on an understanding of the genetic apparatus as Quantum Biocomputer (QB), with the characteristic elements of consciousness and thought.

The main principles of QB are based on holographic and quantum non-locality The pilot model of the artificial world is created with QB laser-based technologies. QB is capable of the following functions bio-computation - a) reading wave of genetic information from chromosomes and cell tissue, b) scanning for converting (recording information) laser photons modulated wideband electromagnetic radiation (mShEI) keeping received primary photon of genetic information, and c) wave broadcast genetic information at macro distances, d) the introduction of genetic information in mShEI form the body of the recipient in its intracellular water, e) programmable management correction metabolism, physiology of the recipient, such as a patient or the old man. It is theoretically substantiated and experimentally demonstrated in our publications.

Our research predates the work of the work of Luc Montagnier's team. Our first publication was in 2003 in Tom.8, № 2, pp. 52-60; P.Gariaev, 2003, Der wellengenetische Code. Tattva Viveka, № 20, pp.68-73. (In German). Luc Montagnier "DNA waves and water" http://arxiv.org/pdf/1012.5166.pdf . It caused a loud echo in the scientific world, because it contains experimental evidence of distant (High) wave transmission structure of DNA directly into the water.

Luc Montagnier team confirmed the main results that we have already proven - remote transfer of genetic information running through the wave, a new era in biology, genetics and medicine. This offers real opportunities to manage health and prolong the lives of people, using linguistic and quantum attributes chromosomes, what we talked about and published work for the past 26 years.

Importantly, about 20 years ago physicist and crystallographer, Nikolai Bulyonkov, proved that the structure of water can create clusters, from which we can build a "water counterparts, copies" of DNA and RNA [Bulenkov N., 1991, Biophysics, t.36, no.2, p.181-243. On the possible role of hydration as a leading integrative factor in the organization of biological systems at different levels of hierarchy].

The below is a summary of the importance of our work and that of Montagnier's group:

1. Regeneration of teeth,
2. Regeneration of the rectum,
3. Regeneration of hair
4. Restoration of lost vision,
5. Gradual healing of the syndrome of Charcot-Marie
6. Simultaneous normalization condition of a large group of people,

7. Rapid and complete recovery from a brain hemorrhage and then comes paralysis
8. Healing of bone cancer and breast cancer,
9. Antidiabetnye effects
10. Initial signs of inhibition of aging. And other data that collected and systematized. Also note that the potential use of locally convex groupuscule much wider.
11. We have just received the results by permissive wave broadcast one of the genes in the stem cells, and data recovery damaged brain after injury. Materials are prepared to patenting and subsequent publication.

Can these technologies be implemented in practice? Consider using our technologies on placenta, cord blood, and photos of healthy children, a person can take mp3-avi record mShEI beneficial spin-torsion information (TSI) contained in umbilical cord blood, placenta, photograph of child. What kind of information? To understand this, I would suggest to view lecture of Russian scientist, the late academician A.E.Akimova, with whom I worked for almost 30 years. Be especially careful at 86-89 minute recording.

There E. Anatoly http://via-midgard.info/news/video/5482-akimov-ae-torsionnye-polya.html says TSI photography. Initial record TSI held a special laser that can generate photons that change their polarization (spin state), when probing any objects - living cells and tissues, bioactive compounds. The spin states of the atoms, members of the sensed object pictures are recorded in photosensitive layer films and photographs. But this is only the first stage of the recording. This notation is common and very extensive information read from the picture, a kind library. The second stage cannot be separated from the first and is to convert probing and spin the information acquired in the broadband laser photons electromagnetic spectrum (mShEI), including radio-wave range. It conversion takes place in accordance with the known physics' theory localized light '. This radio wave range, overwriting photon information, we will digitize and translate into audio format to mp3 initial act of listening to the brain when the patient entered ALL library, or the most part. The same range of radio wave we are simultaneously translate into a format txt, ie again digitized. Then a huge digital digital array handles certain computer program to retrieve its point of reference information that is recorded in avi. This format lets take orienting information in a dynamic and harmonious audio-video images.

But the question arises: Is the information in this mp3 audio version does not are well-known distortion occurring when encoded signal mp3 format? Here we have to say about one of the most important properties of spectra obtained by us. This property is fractal, i.e., self-similarity, multi-scale self-identity. This follows from the fact that the initial act of recording photon information of samples are colliding-beam laser when reflected sensed model laser beam back into the laser cavity, and again comes out on the sample. In fact, we get the photon interferogram (Hologram) probing the sample (blood, placenta, metabolites, photographs, etc.) then converted into radio frequency and, ultimately, in the mp3-acoustic hologram.

It is important to understand that any hologram is fractal (the reverse is not always true). A fundamental characteristic of holograms, fractals is their information redundancy, noise immunity. Therefore the loss of some frequencies in the translation we obtained spectra in the mp3 format does not violate the general bioactive information. Hologram, as you know, you can scratch, break into pieces – with this distortion write on it not happening.

So, we have the first phase of recording (mp3) and the second (avi), several but little to help navigate the library. The human brain is in this sense self-sufficient. Listening to the "library" is perceived by man as noise, because such a reading can be compared with the reading at the same time thousands of volumes of books. Further, the possibility of our brain is such that it is able to navigate even to the extent of information. It seems to me, is strategic information, based on the laws of beauty and harmony. These laws are primary and Initials in our universe and build living organisms, and man, according to the laws of Beauty and Harmony. Undistorted and concentrated form, these laws are implemented in avi file format. Their audio-video series works as an additional corrector health, especially when using different bioactive substances. Melodies and avi video files provides a number of harmonic images, rigidly connected to the original spin modulation of probing laser photons, removing information from extracts of ginseng ginseng, propolis, etc. pantokrina And also with photographs of children. Our computer programs in various ways the original melody voice to avi files musical instruments and even a choral performance. This is logical – Extract our musical information to digest and much more effective in treating this polyphonic version. Recently, we found that information avi better use, writing it with bioactive substances listed above and others. So we created bilioteku avi files of this kind and give their patients in addition to mp3 software.

Use mp3 and avi files should be one by one in the morning and at night. Often, the feelings. It is important to know that, as a rule, work with our files, programs, accompanied by some worsening condition. It lasts differently to 3 of 4 days, and is associated with dramatic positive body-core tuning. Since the total length of the file is quite large and listen to their tedious succession, then, as an option, you can break program for three or four overlapping with, for example, 1,2,3 - 3,4,5 - 5,6,7 etc.

For many, a natural question. If the photo is removed spinor information in accordance with the provisions of Acad. A.E.Akimova, and her record is based on that the grains of silver emulsion is fixed spin states photographed man, what if the original photo is scanned, copied, copied over. And, in general, it is digital. Does the unknown with the medical and retarding aging information? Remains, and evidence of this is the case with cure patients, including from "incurable" diseases, such as cystic fibrosis. Then how to explain it, without falling into the magic at African tribe voodoo shaman? I believe that there is magic, but in the spirit of brilliant book by S.I.Doronina "Quantum Magic" http://www.kodges.ru/13646-kvantovaja-magija.html. The idea of quantum communication photographic image of man with man himself derives from the concept of the universe, as the world hologram. This idea put forward by physicist David Bohm and development in relation to human well-known physicist Simon Berkovich http://www.seas.gwu.edu/~berkov/Theory.htm, http://www.nderf.org/Berkovich.htm . Close to those ideas and teachings of Vernardskogo's Noosphere.

In our practice, we use children's picture healthy relatives of patients children. For example, we have for the treatment of cystic fibrosis in an 8-year-old girl Alice baby photos of her healthy sister, read from it in a special way (using laser), quantum information, and introduced her to a sick child. The disease is fully left. This success is unprecedented. Earlier, as mentioned, the disease CF is considered incurable.

This medical-information-rich sound and worked on Alice, cured it from cystic fibrosis. Another important factor in favor of the technology we use – is possibility of regeneration of human organs and tissues in situ, that is, in the human body.

For those who would like to understand in more detail the physics of laser removal of the wave medical information, we can recommend our articles http://dnadecipher.com/index.php/ddj/article/view/4

Our other developments:

Program matrix disk (CD) or on a flash drive in a format mp3 (audio in frequency range of human speech):

1st program - correction of the immune system.

2nd program - correction of bone metabolism and circulatory systems, and also the brain.

Third program - oncology.

4th program - Correction of general metabolism.

5th Program Option 1 inhibition of aging - slows the aging of the current the patient's age. Recently, it became clear that it also blocks many types cancer processes.

6th Programme - 2nd version deceleration of aging. It is based on the recording of the spectrum
mShEI cells (including stem) of the root of the hair bulb patient. Slows aging in the current age of the patient.

Now all programs are made so that they work individually, i.e., on individual patient and cannot be spread to other people, as in this If do not work and may even be harmful. It is very important to understand These programs - do not have any, we create artificial wave designs, which are introduced into the body of people. 1st - 5th of the program - it records mShEI-spin equivalents of various biologically active substances, have long known and proven medicinal preparations of natural origin, For example, extracts of ginseng, eleuterakokka, mummy, royal jelly and bee
etc. Only 6-I program contains information of your own chromosomes (DNA) at the current time. That is, the information of your DNA is lead, significantly slowing the aging process.

Rules listening

1. Consecutive record listen and listen in the mornings and evenings. If it is difficult listen to everything, arbitrarily divided into parts (see above), each of them listen week. In the future, you can hear all the parts together.

2. Determine which records subjectively feels the best perceived by you to continue to listen to mostly these record (s).

3. Volumes are to be large. Better - minimally audible.

4. Listen preferably before bedtime or during sleep with headphones or without them.

5. Before listening tune in to the program, relax completely, no extraneous thoughts, focus on your own feelings, or just about nothing think. But not necessarily. It works in the background and the business as usual, a little less effectively.

6. In the early days of auditions may be some deterioration of health, as Your body is rebuilt, gets rid of toxins. (Application of the matrix does not mean the rejection of conventional medicine, but complements it) Warning. Copy for the mass dissemination of universal program matrices (1st - 5th) leads to inactivation of both originals and copies.

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**Review Article**

# The Strange World of Wave Genetics

Peter P.Gariaev* & E. A. Leonova

**ABSTRACT**

All biochemical and genetic processes have electromagnetic and audio components. These wave attributes of metabolism and genetic processes can be controlled by the metabolism and thus biosystems. This understanding allows us to remove the accumulated numerous difficulties and contradictions of the old model of the genetic code, which is not to be denied, but incoprated as a part of a whole within the concepts of wave genetics [1-39]. Wave genetics originated in the last century in Russia is a promising breakthrough [1-39]. An initial theory of wave genetics was developed in [40]. As for the experimental evidence of the reality of the existence of wave genes in the form of actual text-like structures and mobile holographic constructions chromosome continuum, there have been several breakthroughs. Increasing evidence support the hypothesis that DNA is a text, not in the metaphorical sense but in the real sense.

**Key Words:** DNA, genetic program, biological science, crisis, wave genetics.

Wave genetics originated in the last century in Russia is a promising breakthrough [1-39] but it develops extremely slowly the main reasons of which is the initial inhibition of growth of this branch of science due to the weakness and lack of physical and mathematical formalism for explaining wave genetics. An initial theory of wave genetics was developed in [40]. As for the experimental evidence of the reality of the existence of wave genes in the form of actual text-like structures and mobile holographic constructions chromosome continuum, there have been several breakthroughs. In addition to our work, V.P. Kaznacheyev, Jiang Kandzhenya, A.B. Burlakova, A.N.Mosolova and A.V.Budagovskogo from Russia and F. Poppom from Germany had done important work. Increasing evidence support the hypothesis that DNA is a text, not in the metaphorical sense, but in a real sense.

In the understanding of mathematical linguistics Noam Chomsky posits that all languages of the peoples of the Earth have a universal grammar. Probably, genetic language is no exception. On the issue of the text of DNA a lot work were done in the U.S. and Israel. Generally speaking, the entire genetic system is multi-level text-holographic information. This was contrary to the so-called "central dogma" of genetics and molecular biology that controls all the functions of genetic organisms located in approximately 1% of so-called coding DNA of the chromosomes, and that the transfer of genetic information is solely on the way DNA □ RNA □ protein. This 1% is formed by encoding genes of proteins, and, human genes and genes of flies, worms, plants, and other organisms do not differ much. The remaining 99% of the genetic apparatus, believes the majority of biologists, no codes, and no more than "junk DNA» ("garbage or junk DNA").

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Found seemingly paradox - genetic differences in different organisms are obvious, but for some reason the same genes.

In fact, there is no paradox. Relatively speaking, proteins - a set of different bricks, but this set is the same for all organisms. From this set you can build different houses, that is, organisms - plants, animals, people. "Junk DNA" - is another, little-studied, information dimension of the genome. This wave and text plans for different organisms, the area of linguistic pluralism, shaped, wave levels encoding organisms. That is, until stalkernaya area for formal genetics, is the subject of wave genetics.

The results of this new understanding of the genetic apparatus, for example, to explain the nature of HIV infection, or new attack - the SARS coronavirus (virus of Severe Acute Respiratory Syndrome (SARS))? Wave genetics treats human immunodeficiency virus and SARS is not the case as the official medicine and genetics [38, 39]. Briefly say that the genetic machinery of retroviruses, including HIV, "clever and cunning." Incorporating into human chromosomes, as text-based, HIV genome using the laws of linguistics and genetics, and the wave can be understood by the human body, its cells, in two senses - safe and unsafe. This applies to viruses with a long latency period save in the genome of affected human cells. Oncogenes use a similar method. It is simple, effective, and allows these ambiguous oncogenic virus-potentially dangerous programs stored in our chromosomes in computer memory for a long time, many years. This technique is called a linguistic homonymy or Mnogosmyslie.

One and the same word, phrase, text, including genetic texts, may be perceived by a cell infected with the virus in different ways, depending on the surrounding text. Here linguistic example: the words - 'Spit' and 'bow'. Both words - homonyms. Outside the whole text (context) they may have a different meaning. For example, the HIV genome, ie, viral RNA, and then a copy of the DNA encoding the virus being introduced into the human chromosomal DNA in the same place it has one (safe) sense for the infected cell (or rather, lack of it), and in another place (in another context), other than he is real, viral. HIV-positive people can live a normal life for years, not knowing anything.

Their potential patients infected cells "do not understand" the text HIV DNA and, therefore, do not use it as a guide to action. But at some point, for some as yet unknown reasons, the DNA of the virus program is moved to another location chromosomal DNA, which is in a different context, and the cells begin to "understand" the true meaning of the text-virus software as part of the functions of cellular DNA-wave biocomputer (DVB). The existence of this kind of computer functions of DNA is likely [8, 37]. That is, the cell DVB "reads, understands" and executes viral DNA program. The start of the DNA program is purely real character when operating standard, canonical real program DNA □ RNA □ proteins. So there and multiplies HIV, which uses the principle of ambiguity homonymous genetic texts. About as well behaved and oncogenes.

However, SARS is not a retrovirus, and, it seems, has a latent period during which the chromosomes of the host cells. In this sense, it is easier of the AIDS virus, which is capable of molecular mimicry and linguistic, that is, the ambiguity of RNA (DNA) programs. However, we can not completely exclude the possibility that revertaznye DNA copies of RNA synthesized and SARS still "stuck" in the human genome in order to all of the same homonymous mimicry. In

addition, viruses use molecular mimicry "on their own", they quickly change their antigenic protein composition of their shells. It also occurs on the laws of linguistics through ambiguity prochityvaniya ribosomes of the host cell homonymous codons of messenger RNA of the virus.

This leads to the injection of new amino acids into proteins of the virus. [27] This is a fundamental property of any genetic system, starting with its triplet code proteins. Homonymous any DNA fragments programs "jump" (transpozitsiruyutsya) in the chromosomes, and thus changing their meaning and some are. Since the redundancy of the genetic code is shown, its superdense, immunity and semantic multidimensionality. That is why the chromosomes are small, and the information in them is enormous, even if it is small genomes of bacteria and viruses. For this reason, in our chromosomes are "silent" genes, which by all accounts should be like the output to give their products, proteins, but they do not. Cell and gene biocomputer in some contexts "does not understand" these genes, so they are "silent", as a "silent" for us a book that we do not understand. In genetics, a phenomenon known as "position effect", but the meaning is not understood. We attempt to explain the reasons for switching "silence talking" DNA.

For this, we apply the concept of DNA-wave biocomputer living cell capable of semantic manipulation of DNA texts and other genetic mental quasi-shaped structures [8, 37]. This bio-computer can control not only the mobile senses DNA texts, but also work as a carrier of a chromosome continuum holographic and (please!) photonic radio wave information inherent in the genome as an attribute [36, 39]. The chromosomes emit sound and laser photons, which are converted into radio waves, and in this important transition to the real level of encoding genetic information to the wave, complementing real. These types of sign (real and wave) series genome are also involved in the management of the body's metabolism and in its embryonic development. For the idea of a radio wave signal photonic communications in the chromosomes is a huge trend in the modern quantum electrodynamics, called the theory of localized light.

So, the genetic machinery of HIV (and perhaps, SARS) - that, in particular, and the totality of his "jumping" genes (transposons) are also involved in their "understanding." If we are able to monitor and control these "leaps to make sense," we can treat people, creating "homonymous immunity" to viruses. This idea is essentially simple, but not easy to implement it. What makes genes "jump"? As our body with its chromosomal DNA wave biocomputer takes "solutions", which DNA fragment and where should move? What gives sighting flying transposons? The accuracy of DNA movement should be provided by certain intracellular counterparts "vision" and "hearing." These properties and should have a DNA wave bio-computer. He must recognize the wave equivalent genetic and biochemical structures and correct them.

Our challenge is to learn to program the DNA wave bio-computer. Now it's real. Indeed, if the virus can behave as would be reasonable, then why do not we use the logic of the virus. The first step is to solve a simple problem, but related to viral infections. It is relatively easy to start working with the bacteria, which are much better known than animal cells, but also have an analogue mobile genes (transposons), but they are called plasmids. Working with bacteria is also important because that is associated with the functions of the plasmids for the terrible human phenomenon - suddenly there is resistance of pathogenic bacteria to antibiotics. Thousands of patients die from infections when antibiotics are useless. Bacteria relatively quickly develop

antidotes to them. It's amazing, largely incomprehensible phenomenon. Imagine that against virulent S. aureus using a powerful new antibiotic, such as vancomycin.

For a while vancomycin successfully kills staph, but then appears to multiply rapidly clone of the bacteria that is resistant to vancomycin. So many antibiotics no longer work. In response to pharmacological create more and more, but the bacteria adapt again. A vicious circle. Gigantic problem. Interestingly, the bacteria in resisting antibiotics and the struggle for survival, carry huge "intellectual" work, which is the power of the powerful institution. They have to "learn" the molecular structure of the antibiotic, "decide" on what chemical bonds cause biochemical strike in order to inactivate the antibiotic, then synthesize the gene whose product - an enzyme - should be a simple matter to make the destruction of the antibiotic. Here again the quasi intellectual activity of bacterial continuum (the community) can not do. Bacterial cells, rather their collective genetic system also works as a wave biocomputer. As with human cells. Why, indeed, should be the wave bio-computer? Because bacteria, setting the structure of antibiotic should carry out some kind of his "spectroscopy", and this can only be done with the help of specialized parts for the collection and transmission of information internal electromagnetic fields that exist in both bacterial and animal cells. This part of spetspolyah especially difficult for a theoretical understanding.

We have built and published a more developed compared to [40], theoretical and biological, physical and mathematical models to explain the behavior of the genome of living cells in this type of intracellular "samovidenii." This is done in the framework of concepts biokompyuternoy genetic linguistics, polarization holography and the theory of interaction of electromagnetic fields with biological systems [1, 5, 6, 8, 9, 14-16, 18-20, 31-39]. Again the same question - what does bacteria have to SPIDovym patients or patients with SARS? Direct. Let me remind you, the analogue mobile (jumping) in bacteria - is a plasmid. They were to be the object of our experiments on them, plasmids, wave management. If we learn to control their functions, learn to manipulate and jumping genes of HIV. We developed and tested the equipment, the functions of which was based on our models wave of chromosomes. This unique optical and electronic equipment is actually the basis for the establishment in the near future of artificial DNA-wave biocomputer, analog cellular.

Here, I will present our recent experimental results as the most representative. Model artificially induced diabetes in rats is of great interest for testing the applicability of our ideas into practice. This causes diabetes has long been used for this purpose material - alloksanom. It destroys the insulin-producing beta cells of the pancreas. We use the equipment to some extent simulates biokompyuternye wave functions of DNA laser-holographic polyarizatsinno and radio wave aspects. As a kind of reprogramming biosystem "floppy" in this equipment complex - a prototype biocomputer - You can enter either pure drug related DNA or living tissue or organ, for example, parts of the pancreas.

All biochemical and genetic processes of living organisms have on the atomic and molecular level, electromagnetic and acoustic component, that is a kind of arrangement. Arranging and mutually aranzhiruemy metabolism and cause-effect related. Thus, the chromosomal DNA of the continuum and emit special znakonesuschie sound and laser light. This gauge or marking field, as a space-time coordinate system for all of biochemical events in the body. They also, of the

fields, in the aggregate are essentially wave genome, which shows the functions of the most 99% of "junk DNA" chromosomes. This part of the genome of multicellular organisms work as a DNA wave bio-computer, which does not exclude the importance of the functions 1% of the so-called coding DNA, responsible for the biosynthesis of proteins. Very approximately, metaphorically of "junk" DNA is like a VCR tape or diskette, video and audio, over the life of the body scrolls serial holographic video, while some text - strategic scenarios of metabolic processes in the body. Video and text can be changed according to our will. The nature of these programs may also change in the course of evolution, and in the process of embryonic development of the organism, when fragments of DNA in the chromosomes are cut and tranpozitsiruyutsya, creating a new dynamic combinatorial bioprogramm-"floppy." We just repeat this process.

In the body, there is an exchange, not only substances such as transposons, but their wave equivalents, that is, their meanings and images. Such a wave can exchange information, while a small degree, to realize our equipment, as a kind of natural cellular biocomputer. The equipment is made so that the laser beam can be "read" this "audio and video" with the DNA or fragments of tissue and organ, we introduce the hardware. And not only consider, but also over a distance of a photon and / or radiofrequency fields and enter into the biosystem-acceptor. Thus biosystem acceptor reprogrammed in semantic genetic and metabolic level. I repeat, this is inherent in the very process of living cells. This is the essence of our theory, which we will prove in the experiments. As you can see, the key idea is very simple. Generators of such fields equivalents metabolism have long been trying to create, but without much success. Our work - another attempt to do so, may be more successful.

Experiments have shown that sufficient minute session introducing the wave of information read from the normal (healthy) of the pancreas and spleen, and that within a week of the rats recovered completely. The level of sugar in their blood before treatment was extremely high, and wave after treatment fell to normal. Spontaneous recovery in these experiments is not more than 2%. This is well known. The experiment was repeated with the same result. Our theoretical model provides a number of possible mechanisms of recovery in such a situation. Apparently, there was a recovery alloksanom destroyed beta cells, or we have included "silent" genes insulin complex in rat tissues other than the damaged pancreas. It is possible that we have launched the development of directional blood stem cells. They migrated to the place of defeat and began to differentiate into beta cells Command wave genes, which in this case are copies wave arrangements genetic-metabolic processes in normal donor beta cells of the pancreas. Most likely, there was a recovery of the affected alloksanom pancreas. This regeneration was stimulated further by raising the immune status of rats by using the wave of information read from the donor spleen. If so, then we have the first case of controlled cloning one of the most important endocrine gland in the living organism.

The next stage of our recent work was to study the mechanisms of bacterial resistance to antibiotics, which is defined in the main function of bacterial plasmids. Model with similar viral plasmids. Will we be able to control bacterial plasmids and resistance genes responsible for bacterial resistance to antibiotics? Was chosen one of the strains of Staphylococcus aureus, one line of which is sensitive to the antibiotic vancomycin, the other is close, is not sensitive. The method is the same - the sensitive cells were used as donors, acceptors were not sensitive wave

genes. If you manage to return the sensitivity, it will be because the cell-acceptors, focusing on the donor plasmid lose and / or resistance genes responsible for the inactivation of vancomycin. Or the second way: the system activates the output of antibiotic bacterial cells. Or work at the same time both a survival mechanism. The experiment confirmed the validity of our assumptions. Sensitivity to vancomycin-resistant strains have been restored.

The third group of experiments was carried out in recent years with the plants Arabidopsis (Arabidopsis thaliana). It was extremely important to obtain further evidence on the plants now that the wave genes are real. It was unclear whether the equipment to read our genetic, specifically genetic and metabolic information not only with living cells, as we have done in experiments with rats and bacteria, but also the preparation of pure DNA, that is, in vitro. This would solve many problems of identification of clean, not noisy, control biosystem wave signal. We have previously poluchilii positive results, working with the plant potatoes. In this case, we read the information from the drug alien (animal) DNA and served it to the germinating seed potatoes for two of her generation. In the 1st generation showed strong anomalous changes in the morphogenesis of the stems: any small tomato-like structures. In the 2nd generation korneklubni changed dramatically - they acquired palkovidnuyu shape with opposing tubers). In the 3rd generation, all purchased new signs have disappeared. These data were unusual. If we are right, then the result could mean that we have introduced a wave of animal genes into plants. What if this happened?

Plant-animal transgenically-wave hybrid? But how to act wave information of DNA taken from one plant to another, somewhat different from the first? Is it possible in this case the wave-type hybridization experiments, Jiang Kandzhenya [41]? Even easier, whether it is possible in principle, such a transfer of information, albeit distorted, but all the same information? It is, in fact, a key point. What is important is that the wave information in the case of pure DNA in these experiments, in part to be distorted. Distortion must occur because the drug plant DNA in vitro and in vivo plant chromosomes in the sign (encoding) for significantly different. But it is another question. Much more important than the first - it is possible, in principle, such a phenomenon? Wave phenomenon genes. If you get a positive answer to the plants, in conjunction with experiments on beta-cells and bacteria it is a different, higher level of evidence. Here, experiments have confirmed the reality of wave genes (see Figures 1-5 in the Appendix). As a donor wave information was taken DNA preparation isolated from Arabidopsis form of winter. Acceptor - not winter form of the same plant. Accordingly prepared a DNA sample ("floppy") is read our device and znakonesuschie photon and / or radio-frequency field generated at the same time served on germinating seeds of Arabidopsis.

In the first generation of almost 90% in the acceptor observed quasi embryonic lethal mutations (control natural background mutagenesis of this type of Arabidopsis to 5%) and some weak signs of phenological winter - later maturation and elongated stem. In the second and third generation of these symptoms have disappeared, as well as new signs have disappeared potatoes in our previous similar experiments. Once again there was a man-made long-range Distant wave transmission, the introduction and assimilation of morphogenetic signals transmitted commands with real DNA template donor one type of plant to another plant type acceptor. Second, targeting wave phenomenon registered teams. Information was received by plants-acceptors. Third: wave information is divided into two parts - the distorted (as expected) and not distorted. Distortion is

caused by the quasi-mutagenesis, undistorted transferred certain genetic traits of winter crops. Fourth, it is caused by the effect of quasi-mutagenesis, mutagenesis, and not true, as was experienced genetic influences are not inherited. Fifth, due to imposed changes in the genetic program of the acceptor are not power, and informative, for the reason that no red photons, much less radio waves used in our equipment, to their energy characteristics are not able to tough mutational damage chromosome breaks DNA molecules.

Perhaps, in these and other experiments, we have a soft wave information short-lived and reversible occurrences in genome-acceptor. Is it possible to attach the chromosomes of such reprogramming seen. It is possible that the recorded wave sign entry-stepping into the genome and the genome of the property will be periodically "remembered" by the body on the mechanisms of memory, based on the phenomenon of the return of Fermi-Pasta-Ulam. This phenomenon is described in detail in my book [1] for nonlinear (soliton) acoustic vibrations of DNA and chromosomes.

Need not ambiguous to say the adoption of such (and following) the results of recognizing the need to review the strategy of genetic research, which is painful and is associated with the interests of many research groups. Questioned voluntarily or not we put the "successes" transgenic "engineering." What does the introduction of a foreign gene (transgene) in the plant, animal or micro-organism, if it is assessed from the standpoint of official and wave genetics? The first says: let's say we have introduced a particular transgene into the plant potatoes. It has become resistant to the Colorado beetle, as the introduced gene has a product - an enzyme that destroys the chitinous integument beetle and he can not reproduce. Potatoes are many, many. OK? Wave Genetics says - not so.

We expect a very nasty surprise. It turns out the new transgenic plant destroys not only the villain-beetle, but nice to us and the bees, butterflies, worms and beneficial microorganisms. Why this attack? Transgenic "engineers" shyly looking away. We do not know, they say. Such examples for thousands, but terrible. Herds and fields freaks, explicit and implicit, hordes of dangerous microbes and viruses - this is the result of this "engineering." What explains these surprises wave genetics? Transgenes introduced into an alien genetic apparatus in a landmark measure controlled chromosomes encode any given protein, but they are the same code in other dimensions are the parts of the genome is different, wave and text programs that are not controlled by "engineers."

These other programs are the wave, that is holographic and text gene. Transgenes to create new, incorrectly interpreted by the genome-biocomputer program and, as a consequence, run harmful biochemical processes. Transgenes, as the normal component of the linguistic and holographic genome their own native biological systems are integrated into the text of a stranger in a foreign chromosomal DNA biosystem. And they are wrong transgenes are read correctly perceive their genome, but only through the synthesis of a protein, which was the purpose of "engineering." But they, transgenes have falsely interpreted alien DNA genome-wave biocomputer, which leads to confusion of meanings of their own text and holographic programs. Transgenic "engineers" want to make artificial genetic programs quickly without understanding their multidimensional nature. And quickly, in this case, it means harmful.

At the creation of the natural genetic programs left hundreds of millions of years of evolution of living beings on earth. "Engineers", ignoring the plurality of languages in ignorance of the genome, only one known to them. It is the language of the biosynthesis of proteins, which was unexpected for them closely linked to the wave languages genetic apparatus. Interestingly, unwillingly, "engineers" actually proves the reality of other genetic coding structures postulated by us. This not planned "engineers" of the experiment, we can say that the protein coding genes (note that there are about 1%) is also a carrier of these participants and the latest wave of chromosomal functions. Here is a brilliant example of frugality evolution - the simultaneous and concurrent use of multiple code chromosome systems. No nonsense, no "genetic junk". All the work.

Another curse of modernity - premature attempts of human cloning. In simple organisms is not threatened by anything. Vegetative propagation of plants - a typical cloning. Strawberries mustache multiply, and nothing. Degenerates, however, quickly. No problem, buy new. With animals, from sheep and other lame duck - worse. Age such clones quickly, freaks, they mainly. Why? "Engineers" eyes in the back side. With the person even worse. Wave genetics predicts that one clone, if it would live up to 10 years, would be a freak and a moron. In this type of cloning organisms alien nucleus injected into an egg from which its nucleus removed. Artificially introduced alien nucleus has been updated wave programs that were designed for the fabric from which the cell and its nucleus removed. Former competence of the cell nucleus (chromosomes), will remain in the wave of genetic memory surrogate egg and will confuses, giving incorrect wave commands to erroneous genetic and metabolic processes. What we see in the clones. How to wash this memory is not clear.

Back in SARS and other diseases in humans in terms of our understanding of them. I will single out as particularly important time factor. That the wave genes - a reality for us is not a question, and another thing, when this ideology accept scientific community at large, not the individual team members. If this drags on for years, transgenic "engineering" may permanently disrupt the gene pool of the planet, leading to the degeneration of life forms on Earth. This is all the more important that the virus SARS, may be the result of military transgenics. Wave genetics considers shortcomings transgenics. Excluding them, you can count on a powerful intellectual leap of humanity in medicine, agriculture and computing. I'm afraid that, for me medicine can misunderstand, thinking that wave genetics is the complete failure of the drugs, as we have done at the wave treatment of rats with diabetes.

But the effectiveness of this and any other wave treatment may increase by orders of magnitude, if they created pharmacological agents that modulate the wave genes. In this sense, pharmacology and genetics wave should be united. Another bright prospects: the problems are resolved regeneration of organs and tissues, hence the problem of rejuvenation. For agriculture - is the ability to create any hybrids of plants and animals. For computing - is the creation biooptoelektronnyh kvazimyslyaschih devices that are similar in features and capabilities to the neurons. The possibility of the bio-computers will approach the power of the human brain. Their work is very different from the "DNA computers" Adelman, who worked mostly in the United States.

Finally, remember that the powerful breakthroughs in science are always associated with acute practical necessity. For example, in medicine, the discovery of penicillin reduced massive and rapid death from bacterial infections. Now, as the accelerator will be the new problem such as SARS which caused global panic – there was no cure and vaccines and chemotherapy useless. Another example is the AIDS virus. We need fundamentally new ideas. As such, I put forward the idea of a radio-controlled SARS. The above examples of the wave genome control rats, bacteria and plants suggest that the virus genome will be no exception. There is a unique opportunity, knowing the characteristics of microwave photonic and acoustic radiation of the genome of the virus SARS, to introduce into it the relevant wave information, blocking its ability to identify landing sites on the target cells and / or block the genetic functions of the SARS virus and, therefore, its ability to reproduce.

In summary, all biochemical and genetic processes have electromagnetic and audio components. These wave attributes of metabolism and genetic processes can be controlled by the metabolism and thus biosystems. This understanding allows us to remove the accumulated numerous difficulties and contradictions of the old model of the genetic code, which is not to be denied, but incoprated as a part of a whole within the concepts of wave genetics [1-39]. Wave genetics originated in the last century in Russia is a promising breakthrough [1-39]. An initial theory of wave genetics was developed in [40]. As for the experimental evidence of the reality of the existence of wave genes in the form of actual text-like structures and mobile holographic constructions chromosome continuum, there have been several breakthroughs. Increasing evidence support the hypothesis that DNA is a text, not in the metaphorical sense but in the real sense.

## Appendix

Experiments: A retrospective view

1984-1985 - the correlation method of laser spectroscopy revealed the phenomenon of abnormally long damped oscillations DNA gels with specific traits related phenomena return Fermi-Pasta-Ulam (FPU). This can be interpreted as evidence of spontaneous soliton excitation of DNA with the DNA of the new memory elements ("return") type. At the same time by the same method discovered the effect of DNA phantom memory that previously has not been previously well known [1, 5, 37] (Fig. 1).

1992 - The method of laser spectroscopy correlation discovered the phenomenon of distant instrument of influence on the vibrational dynamics of gels of DNA [1] (Figure 2).

1996 - In conjunction with the corporation «X» we created bioradioelektronnye and bio-optical systems that simulate some aspects of information-wave processes of the genetic apparatus. These systems combine functional nonliving (Opto-Electronics Engineers) and Live (live cells, tissues, organs, metabolic cell-free system), and preparative isolation and / or artificially synthesized genetic structures (chromosomes, DNA, RNA, proteins). Biological substrates used, functionality combined with fiber-avionics are memory elements and the basis of the simplest

biocomputer, which is able to control the wave through the defined areas of genetic and metabolic information of biological systems [35-37].

1996 - Together with LPI by the two-photon excitation of an artificial laser-like radiation DNA and chromosomes (superluminescence) as an analogue of the natural emission of photons genetic structures [20, 27] (Fig. 3).

2000 - laid the theoretical and experimental basis for a fundamentally new PLR-spectroscopy (polarization of laser-radio wave spectroscopy) with transition localized photons in radio-wave radiation of any object, including chromosomes, living cells, tissues, and metabolites [36].

1993, 2000, 2002 - In the model experiments were restored radiation damaged chromosomes of wheat and barley, as well as some "lively" radiation-damaged seeds Arabidopsis thaliana, collected in the Chernobyl nuclear power plant in 1987. [1, 6, 36].

1999, 2002 - Have a theoretical basis, and then make a soft reversible wave introduction of genetic information from DNA into the genome of the animal origin of potatoes and get while in the 1st and the 2nd generation of a unique plant-animal "hybrid" with signs of unusual morphogenetic that have been lost (not inherited) in the 3rd generation [34, 36, 38].

2001-2002 - was transferred wave genetic information over a distance of about 5 km from the DNA sample extracted from the plant Arabidopsis thaliana line, the plant Arabidopsis thaliana other nearby lines (Figure 4).

2002 - was transferred by a wave of genetic and metabolic information from the pancreas and spleen healthy newborn rats on adult rats suffering from artificially induced diabetes. In this case, symptoms of diabetes in a few days disappeared (Fig. 5).

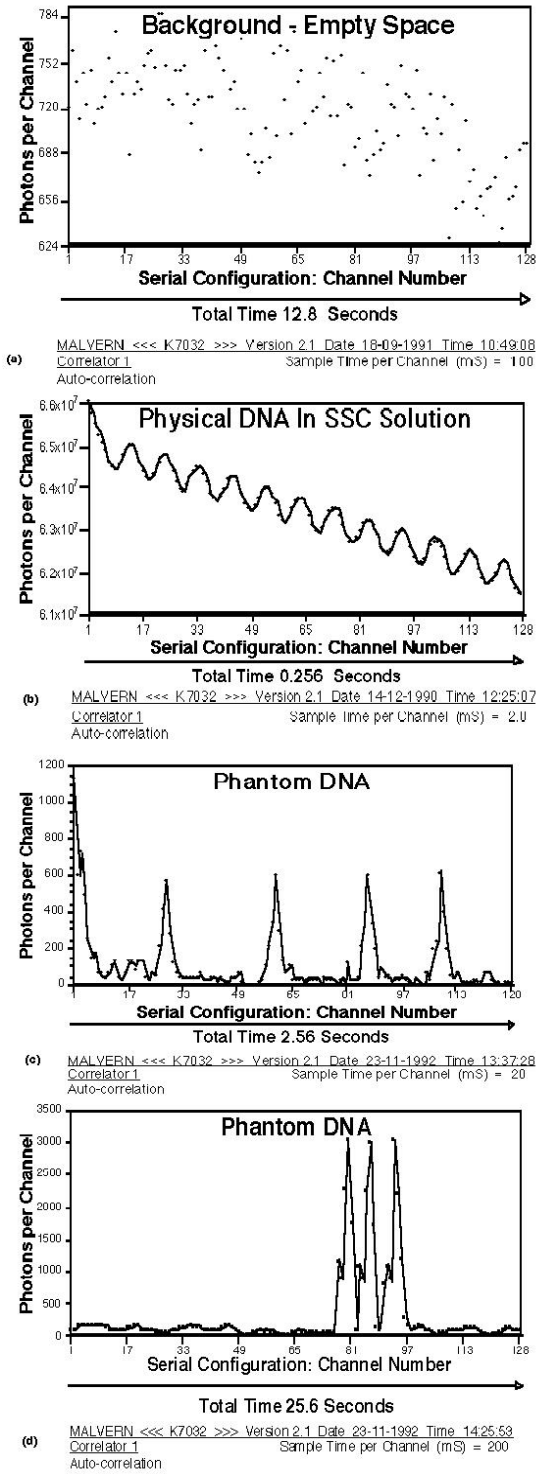
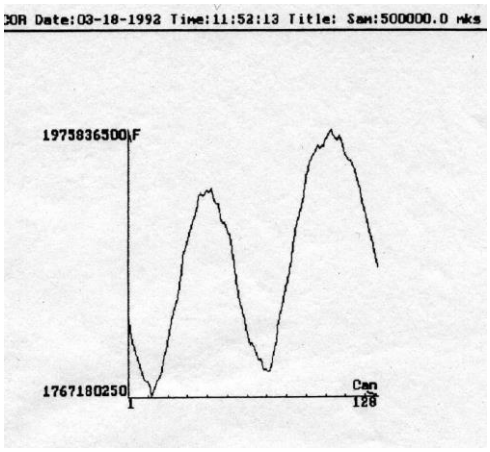
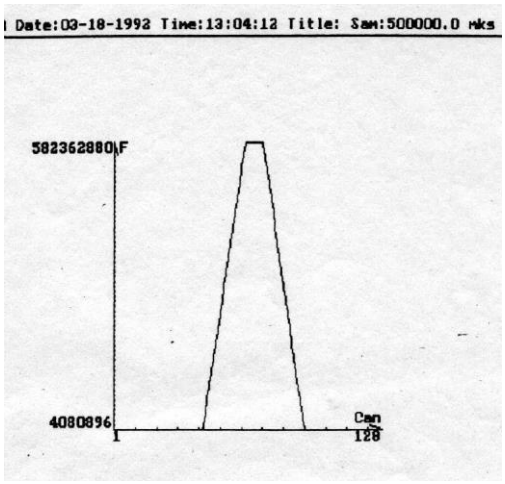



Figure 1. An example of one type of wave memory of DNA is the light-scattering experiment on the detection of phantom memory of DNA in vitro. Used light scattering spectrometer "Malvern".
1st top chart - no DNA control light scattering in the form of time autocorrelation functions, as well as subsequent graphics. Figure 2 - regular fluctuations of DNA molecules. 3rd schedule - the drug is removed from the DNA of the spectrometer, but scattered photons continue to trace the phantom DNA remaining in the empty sample compartment of the spectrometer. 4th schedule - registration phantom after 7 minutes. We interpret these experiments as a manifestation of a previously unknown type of genetic memory.



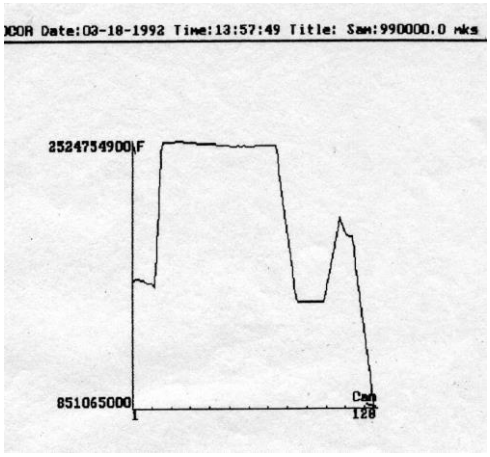




Figure 2. The far field of the interaction between the DNA of the donor and acceptor DNA, carried out with a special instrument industry. For registration of the interaction between light scattering spectrometer used "Malvern". 1st graph above - control light scattering DNA preparation from calf thymus in the form of time autocorrelation function (time registration 11chasov 52min.), As well as subsequent graphics. Monitoring shows regular fluctuations of DNA in a gel form usually observed waveform. We only note that these sinusoids may have specific modulation effects replicated in return Fermi-Pasta-Ulam. However, the general character of the vibrations of DNA gels always sinusoidal. In 13 hours 04 min. LOG-distant DNA in DNA of the donor-acceptor, which dramatically changed the nature of light scattering (Figure 2). In 13 hours 04 min. continued exposure, which is also shown in the anomalous behavior of the drug-DNA acceptor (third graph). Observed abnormal trapezius autocorrelation functions mapping sveruporyadochennoe molekud collective behavior of DNA. Between the spectrometer probe DNA preparation acceptor, and the unit to the DNA donor is about 50 km.

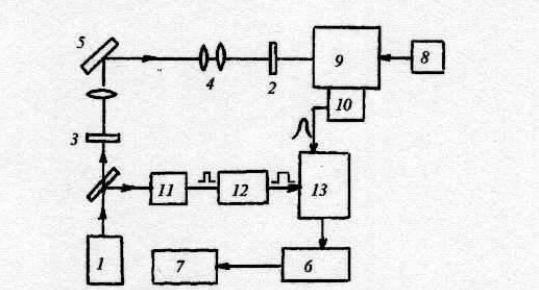



Рис.1. Схема эксперимента для наблюдения двухфотонного возбуждения люминесценции:
*1* – лазер на парах меди; *2, 3* – светофильтры; *4* – конденсор; *5* – кювета с исследуемым веществом; *6* – интенсиметр; *7* – самописец; *8* – блок управления МДР-2; *9* – монохроматор МДР-2; *10* – ФЭУ-130; *11* – фотоприемное устройство ЛФДП-3; *12* – линия задержки; *13* – амплитудно-временной селектор.

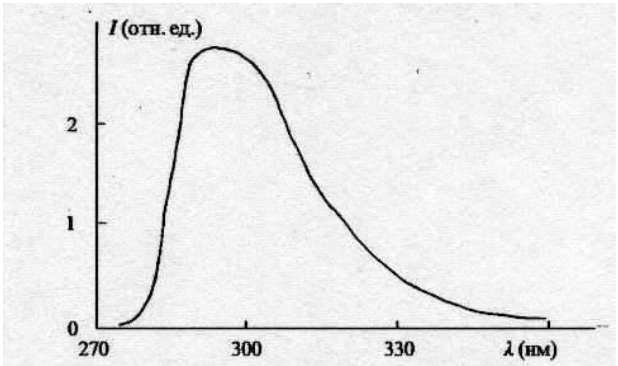



Рис.2. Спектр ДВЛ поликристаллического димедрола.

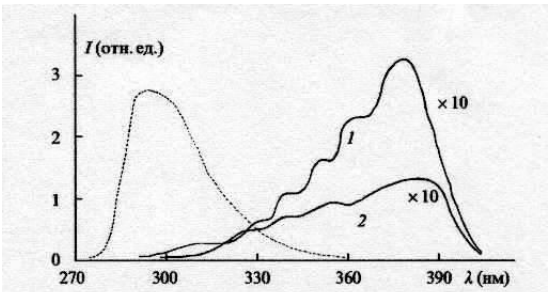



Рис.3. Нормированные спектры ДВЛ димедрола (пунктир), смеси ДНК – димедрол (*1*) и смеси нуклеогистон – димедрол (*2*).

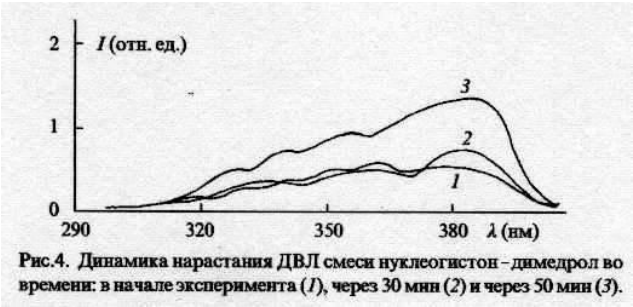



Рис.4. Динамика нарастания ДВЛ смеси нуклеогистон – димедрол во времени: в начале эксперимента (*1*), через 30 мин (*2*) и через 50 мин (*3*).

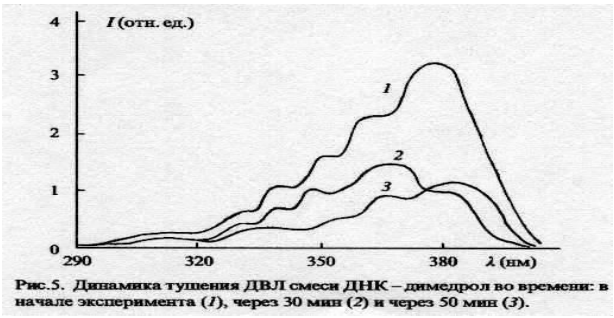



Рис.5. Динамика тушения ДВЛ смеси ДНК – димедрол во времени: в начале эксперимента (*1*), через 30 мин (*2*) и через 50 мин (*3*).

Figure 3 in [20]. that is illustrative of the article A.M.Agaltsov, P.P.Gariaev, V.S. Gorelik, I.A.Rahmatullaev, V.A.Shcheglov, 1996 Two photon excited luminescense in genetic structures. Quantum electronics, v.23, N2, p.181-184. (in English/Russian). The first picture from the top - the experimental setup. The second - the spectrum of two photons excite luminescence dimedrola, which was used as an intermediate material Power Transmission photons on DNA and nukleogiston. Other of the signature under the original drawings.

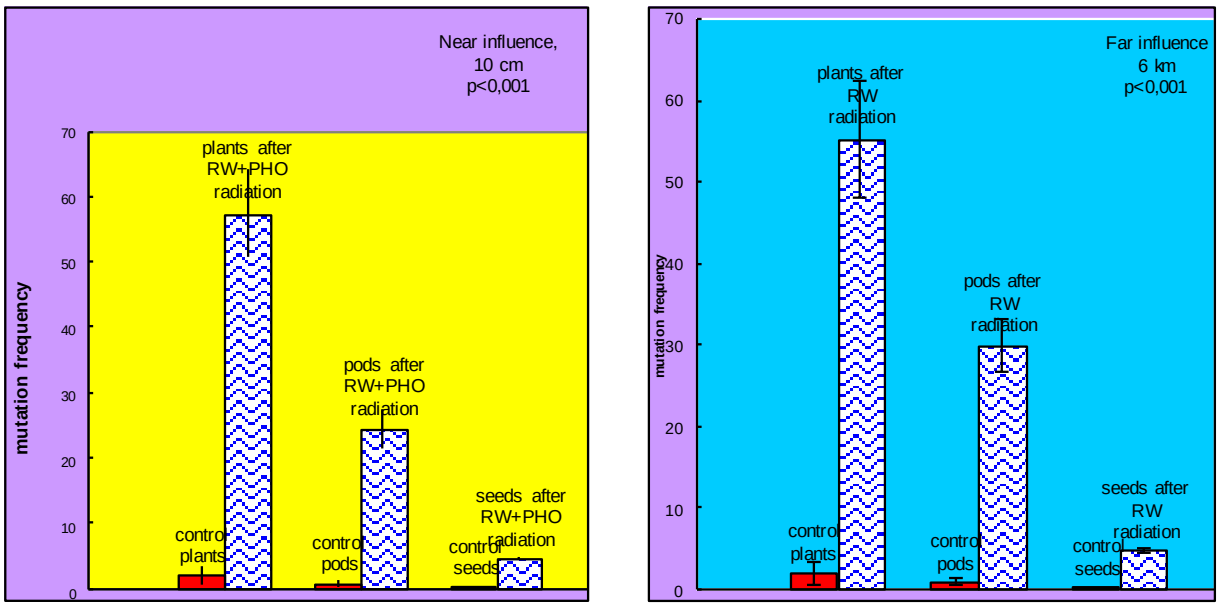



Fig.4. Unpublished data. Experiment on distant transport and the introduction of partially distorted genetic information from DNA sample isolated from a single line plant Arabidopsis thaliana, on the other germinating seeds, close, lines Arabidopsis thaliana. Small red bars - control. Top picture - the impact of photons and radio waves simultaneously. The distance between the laser (wavelength 632.8 nm, power 2 mW) and irradiated seeds 10 cm bottom image - the impact of radio waves only at a distance of about 6 km. The impact is statistically quasi mutagenesis at short and long distances (letalnnye embryonic mutations Muller). This is observed in the first generation at the plant, pods and seedlings. In the second generation mutations are not inherited. That is why we call this phenomenon of quasi mutagenesis. It is not caused by damage to chromosomal DNA, since the energy of red photons and radio waves laser sufficient for this. This is an illustration of the quasi mutagenesis soft reversible wave genetic occurrence in the plant genome. This wave genetic information knowingly distorted because the source of information - the preparation of DNA in vitro, has lost many of the properties of native plant chromosomes in vivo. For this reason, is called quasi mutagenesis. Significantly different here, namely proof of the fundamental possibility makrodistantnogo transfer, even distorted, but all the same genetic information using photons and radio waves modulated DNA preparations.

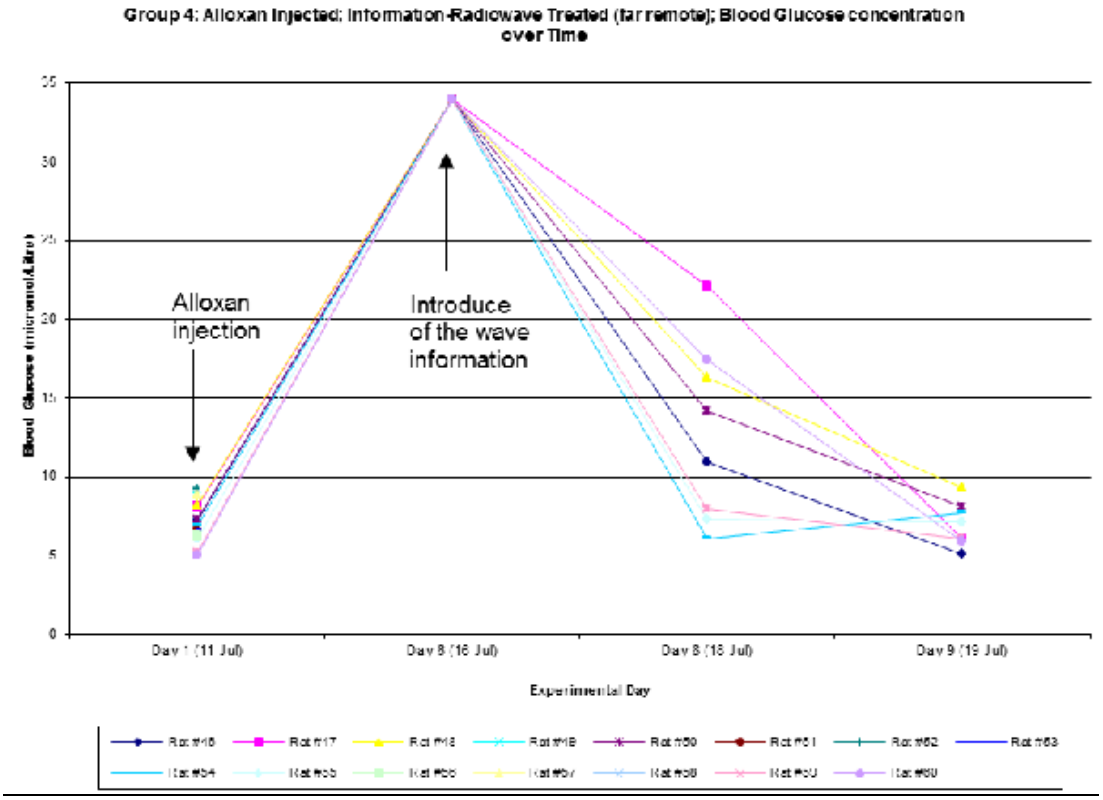



Fig.5. The far field of genome control rat pancreas. Unpublished data. The results obtained in Canada (Toronto) in 2002. Impact on patients with rats only radio waves that contain medical information. The distance from the scanning laser beam treatment to sick rats matrix 15 km.

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