

**Exploration****On the Plausible Implications of Gariaev & Montagnier's Work:  
*Omne Vivum ex Vivo via Crebritudo?***Victor Christianto<sup>\*1</sup> & Yunita Umniyati<sup>2</sup><sup>1</sup>Malang Institute of Agriculture, Malang, Indonesia<sup>2</sup>Swiss German University, Tangerang – Indonesia**ABSTRACT**

Recently Luc Montagnier and his group reported that genetic information might be transmitted to water through applications of electromagnetic field. These experiments seem to confirm what have been done by Peter Gariaev and his group in the past three decades, *i.e.*, that DNA has wave character. However, non-particle view of DNA seems to challenge the standard paradigm of DNA and biology. In this paper, we briefly explore the non-particle view of DNA and consider an extension of the known adage “*Omne vivum ex vivo*” to “*Omne Vivum ex Vivo via Crebritudo (frequency)*”.

**Keywords:** DNA, genetic information, transmission, Gariaev, Montagnier, wave character.

**Introduction**

Recently Luc Montagnier and his group reported that genetical information might be transmitted to water through applications of electromagnetic field [2-3]. These experiments seem to confirm what have been done by Peter Gariaev and his group in the past three decades, *i.e.*, DNA has wave character. However, non-particle view of DNA seems to challenge standard paradigm of DNA and biology. In this paper, we briefly explore the non-particle view of DNA.

Concluding her review on Montagnier's experiments, Laurence Hecht wrote [1]:

With the results of Montagnier, we recognize that the principle, *omne vivum ex vivo*, still holds, but only on the condition that we adopt a non-particle conception of life.

Since there are extensive reports since 1980s concerning the possibility of long distance communication between cells, especially using E.M. field, it seems appropriate to consider an extension of the known adage: “*Omne vivum ex vivo*” to “*Omne Vivum ex Vivo via Crebritudo (frequency)*”.

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## DNA & De Broglie's Matter-wave Hypothesis

Experiments carried out by Montagnier group seem to suggest that genetic information can be transmitted to water via electromagnetic waves. This is very interesting since it challenges standard paradigm in biology [2-3]. This is also related to Gariaev's proposal of DNA wave genetics [4-6].

That cell has capability to communicate at a distance may be not surprising, since there are reports indicating that effect [7-8]. But that electromagnetic field can transmit genetic information to water is interesting result which seems to bring us back to an old battle between corpuscular view and wave view of matter, *i.e.*, Newtonian corpuscular model *vis a vis* Huygens-Fresnel's wave model of matter. Louis De Broglie seemed to give a hint on that issue by proposing matter-wave hypothesis but it appears that this issue is not solved completely.

For clarity, let us put aside objections on Einstein's special relativity and follow De Broglie's argument in his thesis:

$$E = hf, \quad (1)$$

and

$$E = mc^2 \quad (2)$$

Equating (1) and (2) we get:

$$\hbar f = mc^2, \quad (3)$$

or

$$m = f \frac{\hbar}{c^2}. \quad (4)$$

In other words, matter comes from frequency. Therefore, it seems possible at least in theory that not only E.M. field can transmit genetic information to water, but also that E.M. frequency can alter genetic code.

As a note, although our starting point of using (1) and (2) comes from De Broglie's original proposal, the conclusion is rather different because we do not have to accept his pilot wave model.

It seems that equation (4) can give some hints to explain many phenomena related to Montagnier and Gariaev's experiments and may plausibly open new ways to treat DNA as quantum biocomputer [4].

If this proposition holds true, then it is possible to extend the old adage "all life come from life" (*Omne vivum ex vivo*) to "all life come from life through frequency" (*Omne vivum ex vivo via crebritudo*). This is because genetic information can be altered or transmitted through E.M. field and frequency. In other words, one may use 'frequentia', so it becomes: "*Omne vivum ex vivo via frequentia*."

## Plausible Application of the Proposed Concept

To test the new concept of “all life comes from life through frequency” (*Omne vivum ex vivo via crebritudo*) which challenges the standard paradigm in biology, we suggest the following:

Let us define  $f$  = yield frequency, *i.e.*, frequency where matter becomes wave and a new parameter:

$$k = \frac{\hbar}{c^2}, \quad (5)$$

Then we can write equation (4) as a ratio:

$$\frac{m}{f} = k. \quad (6)$$

In other words, from the above equation we may predict that the ratio between a small mass ( $m$ ) like photon with its yield frequency ( $f$ ) is always a constant. The small mass here can be extended to neutrino, electron, muon etc. We hope that the above equation may serve as a means to test the proposed concept.

One plausible application of this proposition is alternative method of cancer treatment using various frequencies. It is known that some frequencies like 444Hz may kill cancer cell without destroying the normal cells. Such a method seems worthy to be investigated and developed further [9].

Montagnier *et al.* also use very low frequency such as 7.83 Hz, which seems to be closely related to the Schumann resonance of 7 Hz. Whether or not such a 7.83 Hz corresponds to ambient frequency of electromagnetic noise in water should be tested with experiments.

## DNA as Perturbed SGE Soliton

There are various models of DNA, one of them is using solitary wave [10]. Its use as a model of phyllotaxis systems including DNA has been proposed elsewhere [11-14]. Now, we will only consider Perturbed sine-Gordon equation (PSGE) as a model of interaction between soliton and external E.M. field.

Perturbed SGE comes in a variety of forms. One common form is a damped and driven SGE: [11, p.17]

$$\Psi_{tt} + \Phi\Psi_t - \Psi_{zz} + \sin(\Psi) = F \quad (7)$$

In addition, the following two versions of the perturbed SGE have been studied in the literature, including:

a. Directly forced SGE: [11, p.19]

$$\Psi_{tt} - \Psi_{zz} + \sin(\Psi) = Mf(\omega t) \quad (8)$$

b. Damped and driven SGE:

$$\Psi_{tt} - \Psi_{zz} + \sin(\Psi) = Mf(\omega t) - \alpha\Psi_t + \eta \quad (9)$$

In the meantime, (2+1)D SGE with additional spatial coordinate (y) is defined as: [11,p.21]

$$\Psi_{tt} = \Psi_{xx} + \Psi_{yy} - \sin(\Psi) \quad (10)$$

In their in-depth review of SGE, Ivancevic and Ivancevic [11] discuss potential applications of SGE solitons in DNA, protein folding, microtubules, neural impulse conduction and muscular contraction soliton. New insights may be expected in the near future in these biological fields, based on sine-Gordon equation soliton.

### Concluding Remarks

Recently Luc Montagnier and his group reported that genetic information might be transmitted to water through applications of electromagnetic field. These experiments seem to confirm what have been done by Peter Gariaev and his group in the past 3 decades, *i.e.*, that DNA has wave character.

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