

## Abstract di Luc Montagnier e Jamal Ajssa

### Electromagnetic Signals Are Produced by Aqueous Nanostructures Derived from Bacterial DNA Sequences

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A novel property of DNA is described: the capacity of some bacterial DNA sequences to induce electromagnetic waves at high aqueous dilutions. It appears to be a resonance phenomenon triggered by the ambient electromagnetic background of very low frequency waves.

The genomic DNA of most pathogenic bacteria contains sequences which are able to generate such signals.

This opens the way to the development of highly sensitive detection system for chronic bacterial infections in human and animal diseases

#### Discussion

We have discovered a novel property of DNA, that is the capacity of some sequences to emit electromagnetic waves in resonance after excitation by the ambient electromagnetic background.

Owing to the low sensitivity and specificity of our signal capture and analysis, the frequencies emitted are all alike, regardless of the bacterial species involved.

However, the experiments of transfer of information through plastic tubes suggest that, by refining the analysis and eliminating the variability of the exciting signals, we might detect specific differences between species, and even between sequences. Indeed, this property may be a general one shared by all double helical DNAs, including human DNA.

But in our conditions of detection, it seems to be associated with only certain bacterial sequences. It remains to be seen whether they are restricted to some genes involved in diseases.

Experiments to be reported elsewhere indeed indicate that this detection applies also at the scale of the human body: we have detected the same EMS in the plasma and in the DNA extracted from the plasma of patients suffering of Alzheimer, Parkinson disease, multiple Sclerosis and Rheumatoid Arthritis. This would suggest that bacterial infections are present in these diseases.

Moreover, EMS can be detected also from RNA viruses, such as HIV, influenza virus A, Hepatitis C

Virus. In these cases, optimal filtration for detection of EMS requires prior 20 nM filtration suggesting that the nanostructures produced are smaller than those produced by bacterial DNA.

In patients infected with HIV, EMS can be detected mostly in patients treated by antiretroviral therapy and having a very low viral load in their plasma. Such

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nanostructures persisting in the plasma may contribute to the viral reservoir which escapes the antiviral treatment, assuming that they carry genetic information of the virus.

The physical nature of the nanostructures which support the EMS resonance remains to be determined.

It is known from the very early X-ray diffraction studies of DNA, that water molecules are tightly associated with the double helix, and any beginner in molecular biology knows that DNA in water solution forms gels associating a larger number of water molecules.

Moreover, a number of physical studies have reported that water molecules can form long polymers of dipoles associated by hydrogen bonds (Ruan *et al.*, 2004; Wernet *et al.*, 2004).

However these associations appear to be very short-lived (Cowan *et al.*, 2005). Could they live longer, being self-maintained by the electromagnetic radiations they are emitting as previously postulated by Del Giudice, Preparata and Vitiello (1988)?

We have studied the decay with time of the capacity of dilutions for emitting EMS, after they have been removed (in mumetal boxes) from exposure to the excitation by the background. This capacity lasts at least several hours, some time up to 48 hours, indicating the relative stability of the nanostructures.

Are the latter sufficiently specific of DNA sequences to be able to carry some genetic information?

If so, what could be their role in pathogenicity, particularly in the genesis of chronic diseases?

Further studies involving close collaboration between physicists and biologists are obviously needed to resolve these problems.

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