

# Alzheimer DNA Vaccine and Relativistic Time Dilation

## Abstract

In this Editorial, I discuss the consequences arising from the recent publication of a paper describing a novel procedure designed to improve efficacy of DNA vaccines in areas as diverse as Alzheimer's disease, HIV infection and cancer. I discuss how this procedure may induce relativistic time dilation at the level of DNA with unimaginable consequences; as we slow down the passing of time at the level of DNA, everything about medicine will be revolutionized. Cells will have time to repair damages to the genome and the epigenome, diseases will be cured from the inside before they manifest themselves, and humans will be entitled to live without aging.

**Keywords:** Alzheimer's disease; Cancer; HIV; DNA; Vaccine; Aging; Time dilation; Relativity

## Editorial

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**Marco Ruggiero\***

*Silver Spring Sagl, Switzerland*

**\*Corresponding author:** Marco Ruggiero, Retired full professor of molecular biology at the University of Firenze, Italy, Founder and CEO of Silver Spring, Via Raimondo Rossi 24, Arzo-Mendrisio 6864, Switzerland, Tel: +41 79 230 9283; Email: marco.druggiero@gmail.com

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## Editorial

In a very recent paper published in November 2017 in the peer-reviewed scientific journal Bio Accent Open Access HIV, I describe a novel procedure designed to improve efficacy of DNA vaccines in areas as diverse as Alzheimer's disease, HIV infection and cancer [1]. This procedure is based on non-covalent binding of highly charged molecules to DNA; positively charged poly-L-lysine is first bound to plasmid DNA. This step is followed by binding of negatively charged chondroitin sulfate to the [poly-L-lysine/DNA] complex in a very precise ratio. The third step consists in encasing the resulting [chondroitin sulfate/poly-L-lysine/DNA] complexes in a shell of phosphatidylcholine with the formation of a structure similar to liposomes or micelles. This structure reminds the physiological assembly of phospholipids and glycosaminoglycans in human plasma as well as the primeval multi-molecular structures responsible for the origin of life on earth [2]. The implications deriving from the development of this procedure are significant for all those diseases where immunotherapy through DNA vaccination may prove useful. In the field of neurodegenerative diseases, current approaches to immunotherapy of Alzheimer's disease, although promising, still show a number of limitations and it is anticipated that "More effective and sophisticated vaccines such as DNA vaccine and recombinant viral vaccines will be utilized in future" [3]. The procedure described in Ruggiero [1] may effectively overcome current limitations and increase efficacy of DNA vaccination in Alzheimer's disease by providing a tool that enhances bio-availability of DNA vaccines and improves immune responses.

The procedure described in Ruggiero [1], however, has far reaching implications that go well beyond improving efficacy of DNA vaccines. Binding of highly charged high-molecular weight molecules to DNA may enable us to modify at will the fabric of space-time at the level of DNA and induce relativistic time dilation with unimaginable consequences; as we slow down the passing of time at the level of DNA, everything about medicine will be revolutionized. Cells will have time to repair damages to the genome and the epigenome, diseases will be cured from the inside

before they manifest themselves, and humans will be entitled to live without aging.

It has been known for more than one hundred years that gravity and time are closely related and Einstein's theory of relativity postulates that clocks run more slowly near massive objects; in other words, gravity slows down the passing of time. For decades, it was thought that gravity-induced dilation of time was an interesting phenomenon at cosmological scale but rather unimportant in the daily lives of humans on this earth. However, with the advancing of technology, it has been observed that time dilation due to gravity is a phenomenon with profound consequences on daily lives; for example, GPS navigators could not work if time dilation was not taken into account. Time runs faster in the GPS satellites that are far away from the center of earth as compared with the cars receiving the signal that are indeed closer to the center of gravity of earth; if these rather significant differences in the passing of time between satellites in the sky and cars on earth were not routinely adjusted, precision of navigation systems would be severely compromised [4]. However, there is no need to go up in the sky to observe differences in time flow. Relativistic time dilation is observable even at much smaller scales; climbing on a chair speeds the passing of time as elegantly demonstrated by Chou et al. [4]. If gravity-induced time dilation is observable at scales measured in centimeters, it is not surprising that it may work at the microscopic level as well, if not down to the Planck scale. In the case of the procedure described in Ruggiero [1], time dilation is to be expected at the level of DNA where highly charged heavy-molecular weight molecules are bound through non-covalent bonds. Gravitational effects on time are due both to the molecular mass of the macromolecules bound to DNA as well as to the electromagnetic fields generated by the movement of highly charged macromolecules at 37 °C. It is well accepted that electromagnetic fields exert gravitational effects thanks to the principle of equivalency of mass and energy that is at work also in biological systems [5]. The procedure described in Ruggiero [1], refers to plasmid DNA; in the case of chromosomal DNA, addition of poly-L-lysine is not required as the positive charges naturally surrounding DNA are represented by histones

and site-specific DNA-binding proteins. In this case, distribution of protein-associated positive charges on the surface of DNA is ultimately dependent on the sequence of bases on DNA and thus on the genetic information contained in DNA. In other words, the natural, gravity-induced, DNA-binding protein-dependent, time dilation in chromosomal DNA is dependent on genetic information that, by definition, is different in each individual. In addition, since DNA-binding proteins are not uniformly distributed around DNA, it may be inferred that also gravity-induced time dilation is not uniform; in some regions of DNA time flows more rapidly than in other. Methylation of DNA and acetylation of histones, by varying the tridimensional structure of the DNA/proteins assembly, further modify gravity-induced time dilation in a continuously changing manner that is different for each individual.

However, introduction of an uniform, monotonous, highly charged, macromolecule such as chondroitin sulfate that surrounds basic DNA-binding proteins independently of DNA sequence, introduces a type of gravity-induced time dilation that is not dependent on the individual genetic information. Therefore, time will run slower for the DNA to which the chondroitin sulfate is bound; this will give extra time to the well-known DNA repair mechanism to perform their tasks and will slow down aging at the level of DNA. Chondroitin sulfate, being a highly charged molecule, does not cross neither the plasma nor the nuclear membrane *per se*. This is precisely the reason why phosphatidylcholine is introduced in the procedure described in Ruggiero [1]; reconstitution of the primeval multi-molecular structure responsible for the origin of life on earth enables internalization of chondroitin sulfate into the cells ultimately reaching the basic proteins surrounding DNA [2]. Slowing down the passing of time at the level of DNA will enable cells to repair mutations and/or alterations of the epigenome exploiting the repair mechanisms that evolved over the course of millions of years, thus preventing the onset and development of diseases and aging.

### Significance of work

The original procedure and the concepts commented in this Editorial represent a breakthrough that has the potential to

revolutionize the field of DNA vaccination in areas as diverse as Alzheimer's disease, HIV infection and cancer. More important, however, is the observation that this procedure may induce relativistic time dilation at the level of DNA with unimaginable consequences; as we slow down the passing of time at the level of DNA, everything about medicine will be revolutionized. Cells will have time to repair damages to the genome and the epigenome, diseases will be cured from the inside before they manifest themselves, and humans will be entitled to live without aging.

### Author's contribution

Marco Ruggiero developed the procedure and the concepts described in this paper and wrote the manuscript.

### Competing Interests

Marco Ruggiero is the founder and CEO of Silver Spring, a Swiss research and development company in the field of supplements and probiotics. No product of Silver Spring is mentioned in this study. Marco Ruggiero is the inventor of the immune stimulating molecule designated Rerum® mentioned in reference n. 2.

### Acknowledgement

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