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Current Approach to Solving the Problem of the Mind-Body

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Current Approach to Solving the Problem of the Mind-Body

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I. Introduction

A psychophysical problem ("mind-body problem") is an issue of mental- physical phenomena. There are no convincing hypotheses in science explaining how objectively recorded brain processes generate a subjective psyche devoid of the attributes of materiality.

Until now, science has not been able to formulate a sufficiently substantiated working theory explaining the occurrence of mental phenomena; therefore, in this review scientific article, based on the results of our previous works, we will try to solve the problem of the mind-body relationship (psychophysical problem).

Our scientific approach to solving a psychophysical problem involves interdisciplinary and theoretical research using scientific meta-analysis. It is necessary to revise some fundamental knowledge in biology, and to formulate a new and effective scientific and philosophical concept of the universe. Since 2018, we have already taken the first steps to solve this problem. We started by defining the functions and place of viruses in nature and rehabilitating the classical cell theory [19]. Further, a nano-model theory of the functioning of the genome, a new classification of the genome, and the classification of viruses according to V.Sargsyan were formulated[18]. Thanks to the above achievements in theoretical and fundamental biology, we have 14 viral theories and a new genetic theory.

Based on this, we can understand and substantiate the mechanisms of the formation of human higher nervous activity [12]. As a result, this achievement became the scientific basis for creating our scientific and philosophical concept of the unity of the universe [17].

Several more scientific theories have already been created and logically substantiated. For example, the theories of the big biological explosion, integration, hierarchical universe functioning and, knowledge about the biocommunication system of humans (and other multicellular biological species) [20], [15]. However, we will not consider these theories since they are practically not needed to solve a psychophysical problem within the framework of this scientific article.

So, let's start by defining the true place and role of viruses in nature. Next, we present our rehabilitated classical cell theory [16], new genome classification, and nano-model theory of genome functioning [14]. The presentation of this scientific knowledge is very important for a clear understanding of the mechanisms of the formation of human higher nervous activity. It is impossible to solve the problem of the mind-body relationship. Let us also dwell in detail on our scientific and philosophical concept of the unity of the universe.

II. Scientific Meta-Analysis in Virusology and Viral Theories

a) Scientific meta-analysis in virology

Viruses are one of the biggest mysteries in modern biology. A virus (Latin virus – poison) is a non-cellular infectious agent that can reproduce only inside living cells. Viruses infect all types of organisms, and we have already described about 5-6 thousand types of viruses. However, we believe that there are more than one hundred million of them. Viruses are the most abundant biological form and are found in almost every ecosystem on planet Earth.

However, given the current level of knowledge in various fields of science, there is a need to revise some of the fundamental ideas about the true place and

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functions of viruses in nature. For this, a meta-analysis of various reliable scientific data has been perfected.

For the first time, the existence of a virus (as a new type of pathogen) was proved in 1892 by the Russian scientist D.I. Ivanovsky.

Five years later, in the study of diseases in cattle, asimilar filterable microorganism was isolated. And in 1898, when D. Ivanovsky's experiments were reproduced by the Dutch botanist M. Beijerinck, such microorganisms were called "filterable viruses."In an abbreviated form, this name began to denote this group of microorganisms.

In 1901 they discovered the first human viral disease – yellow fever. The American military surgeon W. Read and his colleagues made this discovery. In 1911, Francis Routh proved the viral nature of cancer – Rous sarcoma.

Based on the knowledge of viruses in the nature, it will be possible to study the fundamentals of life and its manifestations. According to our opinion, that is the answers lie to many scientific and practical problems of modern humanity.

So, we have formulated 14 new viral theories, each of which reveals one of the functions of viruses in nature (Table 1).

Table 1: Viral theories

1.	The Viral Theory of the Electromagnetic Reception
2.	The Viral Theory of Biocommunication
3.	The Viral Theory of Signal Transduction
4.	The Viral Theory of The Functioning of the Energy system of Cell
5.	The Viral Theory of The Functioning of The Immune System
6.	The Viral Theory of Information Perception
7.	The Viral Theory of Memory Formation
8.	The Viral Theory of The Functioning of The Somatic Nervous System
9.	The Viral Theory of The Functioning of The Autonomic Nervous System
10.	The Viral Theory of The Functioning of The Endocrine System
11.	The Viral Theory of the Functioning of The Cardiovascular System
12.	The Viral Theory of The Functioning of The Reproductive System
13.	The Viral Theory of The Evolution of The Organic World and Homo Sapiens
14.	The Viral Theory of Aging

But first, here are some data that confirm the consistency of viral theories suggested by us.

1. To date, we have identified and investigated approximately 5-6 thousand types of viruses, although we assume that there are more than one hundred million of them. Why is such huge biodiversity necessary? The answer to this question lies in our theories. Here we will only note that nature does not create anything in vain.
2. Viruses differ in a special way of reproduction: in the cell, the nucleic acids of viruses and their proteins synthesize separately, they are assembled into viral particles.
3. The genetic apparatus of viruses can easily mutate and thus change their "behavior."
4. Viruses are widespread, capable of infecting almost all representatives of Flora and Fauna, even many microorganisms. Many viruses can infect one or many cell types of various cellular life forms.
5. There are 5×10^{7} bacterio phages per milliliter of ocean water.
6. According to geneticists, 1/3 of the human genomeconsists of so-called "junk genes" ("non-coding DNA"). It is also known to be a space where one can find viruses.
7. We can get the biological information required for the growth, development, and maintenance of the organism's functions in the genome. It is a known fact that human genes contain 100,000 DNA fragments of endogenous retroviruses, which make up 5–8% of the human genome.
8. Viruses, their derivatives, and closely related structures make up at least 43% of the human genome[4].
9. According to recent data, half of the human genome is made up of the DNA of viruses. In fact, a person is a product of symbiosis, that is, the relatively peaceful coexistence of a person and a virus", says

Frank Ryan. - "If it weren't for them, there would be no us, or we would be completely different"[3], [4].

10. We know that even in a healthy body, numerous viruses live without causing any particular harm.
11. Viruses promote the fertilization process and the formation of the placenta in humans successfully, in fact, we owe our existence as a biological species to the functioning of viruses.
12. Why do children under a certain age have almost no developed long-term memory function? The fact is that only by 1-2 years of age a person has formed that necessary arsenal of viruses, the viral composition that makes it possible for a person to exercise this unique opportunity – to remember, archive information for a long time. Human Virom is unique for each person, and this can explain the individuality of the cognitive abilities of each person.

Thus, we concluded that viruses are migrating organelles of eukaryotic cells. They are part of us – cellular life forms and have multiple functions. Viruses are not independent forms of life, and the cellular theory evidences it.

We describe three principles of classical cell theory below:

1. All living organisms consist of one or many cells.
2. The cell is a structural and functional unit in organisms.
3. A cell arises from the division of the pre-existing cell.

Many scholars dispute the first of these principles. Because non-cellular objects such as viruses are considered life forms.

However, according to our viral theories, the cell theory is scientifically completely sound[16].

In 1898, when reproducing the experiments of D. Ivanovsky, the Dutch botanist M. Beijerinck first used the term "virus," as he called such microorganisms "filterable viruses." One hundred twenty years later, relying on the above, in 2018, we proposed to replace the term "virus" with the term bio communicator, which is more consistent with the functions they perform.

If we consider the place and role of various living organisms at the level of the planet Earth (biocenosis), then only animals (including Man),plants, fungi, archaea, and bacteria are living biological organisms. And viruses are not living biological species, since, for their vital activity (development and reproduction), the presence of a cell is necessary. In fact, at this stage of the evolutionary development of the organic world of the planet Earth, this is the case. Viruses are not non-cellular life forms; they are only components of cells (migrating organelles of eukaryotic cells) but very important. In other words, it is due to the functional activity of viruses (bio communicators) that the cell is "revived." Without viruses and/or entero viruses, a cell is an almost "dead" conglomerate of organic matter.

Thus, the smallest unit of life is a cell with viruses, enteroviruses, and other mobile genetic elements.

The following are only those viral theories necessary for understanding the functioning of the higher nervous activity of man, and solving the psychophysical problem. For the full acceptance of viral theories, it is necessary to consider the new genome classification, which we present below.

b) The viral theory of information perception

Viruses of humans, animals, and other organisms play a leading role in the process of information perception. The information we receive from the sensory organs (receptors) goes to the central nervous system, where they transfer into electrical impulses. And the process of electrical activity in the central nervous system leads to the formation of a sequence of nucleotides of DNA/RNA-containing viruses (biocommunicators) and also changes their configuration (3D) and motor activity (it turns out 4 D). Microtubules of the cells play an important role in this process, which also form an antenna on the cell surface. Microtubules are the transport infrastructure for DNA and RNA-containing biocommunicators (viruses). Thus, biological nano-models of various objects "noticed" by the body's receptors are created in neurons and, consequently, in the brain. A person can also think figuratively. Each thought can correspond to one specific "virus", and the emotion is already a whole group of "viruses". Often, a "ready-made virus" or a group of the moutside (a thought or emotion of another organism) can enter the brain and thus carry out communication. This canconfirm the fact known to science that viruses can control the consciousness of various species of animals and humans. This, in turn, creates the prerequisites for the formation of long-term memory.

Since the perception process begins with the receptor, we should note that the functional activity of a single receptor also depends from the activity of biocommunicators.

c) The viral theory of memory formation

The process of constant electrical activity in the central nervous system during reverberation leads to structural changes in DNA/RNA-containing viruses (biocommunicators) of humans and animals. All these changes in neural responses are called consolidation, and biocommunicators are the material carriers of information that enters long-termmemory. The formation and further storage of biological nano-models take place. Further, the expression of these genes leads to the extraction of information from long-term memory. In the human body herpes viruses perform the function of the information carrier in long-term memory.

Herpes viruses (lat. Herpesviridae) – a large family of DNA-containing viruses that infect most of the population of our planet.

As of May 2016, the International Committee on Virus Taxonomy (ICTV) has registered 86 species. A distinctive feature of viruses of this family is the presence of the virus in the cells latently, persisting, indefinitely long time, without clinical manifestations. Therefore, according to our theories, at this time, they perform the functions of the higher nervous activity of man described by us.

Memory is localized not only in certain areas of the brain but also distributed throughout the body. However, the brain of the body plays a key role and the place of storage of memory. Brain structures are responsible both for the formation of memory in the DNA (possibly also in RNA and in some proteins) of biocommunicators, as well as for the processes of implementing the information contained in these molecular memory carriers.

d) The viral theory of the somatic nervous system functioning

Viruses of the human and animal bodies play a leading role in transforming the will and intentions of the body into movements. They store all the acquired skills of the body during life in the form of changes in the structural and spatial organization of the genetic material of bio communicators in the long-term memory of humans or animals, in the future, if necessary, the expression of these genes occurs. It is thanks to the above-described molecular mechanisms that the body has the opportunity to exercise motor and speech activity and subordinate the functioning of the somatic nervous system to its will. This can explain the formation of linguistic abilities in humans. And, therefore, we must search for the genes responsible for speech in the acquired genome (biocommunicator genes). For more information, see our nano-model theory of genome functioning, presented below.

e) The viral theory of the functioning of the autonomic nervous system

Human and animal viruses also play a leading role in the functioning of the autonomic nervous system. Many innate and acquired skills of the organism during life are represented in the form of changes in the structural and spatial organization of the genetic material of bio communicators in the genetic/long-term memory of the organism and in future, if necessary, the expression of these genes occurs. Thus, the autonomous functions of the human and animal nervous systems, which are vital for the body, are provided. It is thanks to the above-described molecular mechanisms that the body has the opportunity to better adapt to changing environmental conditions. However, we should take into account that the genes of the main genome also carry a significant burden in ensuring the functioning of the autonomous nervous system.

III. Modern Genome Classification and New Genetic Theory

a) The main and acquired genome

Genome is a set of hereditary material contained in the cell of the body. The genome contains the biological information needed to build and maintain the body. They are built from DNA. There is also another definition of the term "genome", according to which the genome is a set of genetic material haploid set of chromosomes of this species. According to classical data, in humans (Homo sapiens), 23 pairs of chromosomes represent the hereditary material of the somatic cell (22 pairs of autosomes and a pair of sex chromosomes) located in the nucleus, and the cell also has many copies of mitochondrial DNA. Autosomal chromosomes, sex chromosomes: X and Y, and human mitochondrial DNA contain approximately 3.1 billion base pairs.

In many species, only a small fraction of the total genome sequence encodes proteins [21]. So, only about 1.5 % of the human genome consists of protein-coding sequences of DNA-exons (DNA fragments, copies of which make up mature RNA – mRNA). The reasons for the presence of such a large amount of non-coding DNA in eukaryotic genomes and the difference in genome size (C-value) is one of the unsolved scientific mysteries; research in this area also points to a large number of fragments of relict viruses in this part of the DNA.

We were reading the sequence of letters in the human genome – the sequence of four types of nucleotides – does not show how the genome works. They are not a decoding of the genome, but, on the contrary, an encrypted text, the meaning of which we do not yet understand. According to modern classical concepts the "main intrigue" is that all the body cells have the same DNA, which contains information about the encoding of proteins. But the cells of different tissues: muscle, nerve, or blood cells are not similar to each other, although they arise from the same cell – the zygote. In the process of development, each organism goes from a fertilized egg (zygote) to an adult and at the same time changes all the time, but the genome does not. The work of genes is not the same at different stages of ontogenesis. How all this is regulated is "the main mystery of life."

Below is the scientific position proposed by us, which allows us to explain" the basic puzzle of life."It became possible by understanding the formation and functioning of the acquired genome in ontogenesis. In other words, the plasticity of the genome acts in nature[18].

Below is the classification of the genome according to Vahram Sargsyan.

The main genome is a set of all the genes received by the body from the egg and sperm due to fertilization (nuclear, mitochondrial, plastid). It is the *vertical transfer of genes.*

The acquired genome is a set of all the genes received by the body during the embryonic and postembryonic periods from the migrating organelles of the cells –biocommunicators (viruses) in the form of DNA and RNA molecules. It is important to note that the formation of the acquired genome occurs based on existing genes (biocommunicators) under the influence of, for example, electrical processes occurring in the nervous system of the body (see viral theories of information perception, the formation of long-term memory and the functioning of the somatic nervous system)[19]. They occur as a result of the activity of the body's sensory systems. Electromagnetic radiation influences on the formation of the acquired genome (for example, the ultraviolet spectrum of radiation) of natural and artificial origin. For more information, see the viral theory of electro-magneto reception. It turns out that all changes occurring in the external and internal environment of the body are fixed (cause changes) in the acquired genome. Those that are important we can find in the body's long-term memory reserves. This is *horizontal gene transfer.* This genome is individual for each somatic cell. If the process takes place in gametes, then endo-viruses genes can be formed, which, as is known, are already inherited from generation to generation.

Plasmids play the role of biocommunicatorsin single-celled prokaryotic organisms (for example, in bacteria). However, they are not able to perform all the functions inherent in biocommunicators. Below we will draw your attention that plasmids carry out active horizontal gene transfer in prokaryotes. The analogs of plasmids for eukaryotes are viruses. Bacteriophages (bacterial viruses) are not biocommunicators (migrating organelles) of bacterial cells. The fact that they forcibly introduce their genetic material into the bacterial cell speaks about it. Thus, bacteriophages are biocommunicators of various eukaryotic cells (their migrating organelles), which carry out and ensure the regulation of biochemical processes in bacterial cells and their number (on the part of the host of this biocommunicator).

It is interesting to imagine the following analogy: *plasmids are derivatives of the bacterial chromosome, and viruses are derivatives of the cell nucleus.* Although from an evolutionary point of view, the cell nucleus arose from a virus.

According to the above information about the genomes, we can give a new definition of the term "phenotype". *A phenotype* manifestsaset of genes obtained by vertical and horizontal gene transfer and the result of their interaction. Therefore, the phenotype is the expression of the genotype. Naturally, recombination and mutation variations have their contribution.

Throughout its life – from the moment of fertilization of an egg (formation of a zygote) to death the organism has the opportunity to enrich its genotype by increasing the proportion of the acquired genome. It takes place by horizontal gene transfer. The information received by the sensory systems (receptors) of the body about the external and internal environment actively affects the change (enrichment or impoverishment) of the acquired genome of the body. As a result, the phenotype changes. However, these changes affect only the genes of cells and tissues of the body. For example, the cells of the central nervous system of humans or animals, the immune system, or the liver cells change. If the changes affect the germ cells, then new signs and properties will be inherited, from generation to generation.

According to the "additional" position of the cell theory, some cells of multicellular organisms, such as a zygote, are totipotent. That is, they can give rise to the entire organism, having the genetic strength of all cells of this organism, that is, equivalent in genetic information, but differing from each other in different expressions of different genes, which leads to morphological and functional diversity - to differentiation.

Our opinion is radically different from the above "additional" position of the cell theory. Bearing in mind that there is an acquired genome(other than the main one) – cells in the process of ontogenesis of the organism no longer become equivalent in genetic information and therefore differ from each other not only by different expression of different genes but also by a different gene set of the acquired genome. This is of crucial importance in the morphological and functional diversity (differentiation) of cells. It is a necessary condition for the appearance of highly specialized cells of multicellular organisms (in humans, for example, during the perinatal and postnatal periods of ontogenesis). This feature is not taken into account by many bio-engineers when obtaining tissues and organs *in vitro* for their further use for medical purposes (transplantation of tissues and organs) and therefore cannot get many types of human tissues and organs that are fully functioning and suitable for transplantation to the recipient. To date, no scientist in the world has managed to obtain a human brain *in vitro*, and it will never work if you do not take into account the presence of the acquired genome of the cell, because in complex functioning organs (for example, the brain), horizontal gene transfer plays a key role.

Thus, considering our classification of the genome into main and acquired, it is possible to achieve a complete understanding of the various biological processes occurring at the genetic, cellular

(biochemistry, biophysics), and organizational (physiology) levels of the organization in norm and pathologies.

b) Brain plasticity and genome plasticity

According to the above, the genome of an organism is an actively and dynamically developing system throughout the entire period of ontogenesis. Still, for the greater credibility of this thesis, we will give an analogy with the plasticity of the human brain below.

Neuro plasticity is a property of the human brain, which consists of the ability to change under the influence of experience, as well as to restore lost connections after damage. We start to speak about this property relatively recently. Previously, we generally accepted that the brain remains unchanged after its formation in childhood.

The discovery that thoughts can change the structure and function of the brain, even in old age, is the most important achievement in the field of neurology over the past four centuries. Norman Doge offers a revolutionary view of the Human Brain [6].

The brain consists of interconnected nerve cells(neurons) and glial cells. The process of learning can occur through changes in the strength, the emergence or destruction of connections between neurons, as well as the process of neuro genesis. This is due to neuro plasticity.

During the 20th century, we generally accepted that the structure of the brain stem and neocortex remained unchanged after the completion of formation in childhood. It meant that learning processes there can only proceed by changing the strength of connections, while the areas responsible for memory processes (the hippocampus and the dentate gyrus) and preserving the ability to neurogenesis throughout life are highly plastic. This opinion is changing due to new research, which claims that the brain retains its plasticity even after the period of childhood.

Neuroplasticity can manifest at different levels, from cellular changes in the brain, up to large-scale changes with reassigning roles in the cerebral cortex as a response to damage to specific parts. Modern medicine widely recognizes the role of neuroplasticity and is also used as a phenomenon in memory development, learning, and repair of the damaged brain. William James was the first to propose the idea of "plasticity" of the brain in 1890, but everybody ignored it for the next fifty years. The Polish neurophysiologist Jerzy Konarski was the first to coin the term "neuroplasticity".

One of the fundamental principles of neuro plasticity is the phenomenon of synaptic pruning: in the brain, there is a constant process of destruction and the creation of connections between neurons. Recall that *synaptic pruning*– "neuronal pruning"- reducing the number of synapses or neurons to increase the efficiency of the neural network, removing redundant connections. Pruning involves both axon pruning and dendrites pruning.

Thus, scientists accepted *the fact of neuro plasticity.* Why not accept *the fact of the plasticity of the genome* (the processes of the origin/destruction of genes in the process of ontogenesis of the organism) and use this understanding of the fundamental biological processes to explain the numerous processes that occur in nature and are "riddles" of science. I suggest that geneticists do not make the "mistakes" of neuroscientists and timely review and determine the question of the plasticity of the genome of the organism, which will have an impact on the development of biological sciences and numerous practical areas of knowledge.

IV. Nano-Model Theory of Genome Functioning

According to our nano-model theory of genome functioning, a DNA molecule stores biological information not only in the form of a genetic code, consisting of a sequence of nucleotides but also in the form of a spatial-structural organization. It means that the information component is hidden not only in the primary structure of the organization of DNA molecules but also in II and III structures. These are special kinds of biological nano-models.

RNA molecules can perform a similar function in nature, as well as, to some extent, the protein molecules.

DNA contains information about the structure of various types of RNA and proteins[1]. But this does not mean at all that the DNA molecule cannot carry out numerous independent biological functions that ensure the vital activity of living systems.

Almost all genes function like nano-models. However, proceeding from the fact that many genes of the genome are localized in the cell nucleus and must function in the cytoplasm or outside the cell, nature has created the processes of transcription and translation known to modern biology. The protein has a bulky structure (definite shape) due to its II, III, and sometimes also IV structure. It is known, for example, that an enzyme protein has an active center that functions according to the principle of a key to a lock. Depending on its form, it has had a functional activity. The DNA molecule (it's specific part – the gene) also has II and III structures; that is, it is not just a linear molecule consisting of nucleotides.

The whole point of the processes of transcription and translation comes down to creating a copy of the nano-model (DNA gene) in the form of ribosomal RNA (rRNA), transport RNA (t-RNA), or messenger RNA (m-RMK). In mRNA, the process of biosynthesis of the polypeptide chain (primary structure

of the protein) follows – translation on polyribosomes in the cytoplasm of the cell. Ready-made copies of DNA nano-modelscan function outside the cell nucleus of a eukaryotic cell. As is known, protein biosynthesis takes place based on mRNA information; rRNAs are part of ribosomes that are actively involved in the biosynthesis of proteins (primary structure). The delivery of amino acids to the site of protein synthesis requires a t-RNA. Exons – codingregions and introns –non-coding regions make up many genes. When transcribed from a gene, RNA carries both exons and introns. In the process of splicing, introns excise, and exons stitch together to form a mature mRNA. Further, the polypeptide chain of the protein synthesized during translation will acquire a spatial-structural organization and become a functional product of full value.

Thus, here we have presented in a simplified form the process of forming copies of nano-models based on biological information embedded in the DNA of genes.

And some of the genes (mainly "junk genes" and some genes of the acquired genome) do not need such intermediary processes. Therefore, there is no need for transcription and translation. The genes can leave the cell nucleus and cells. This applies to biocommunicators(containing DNA and RNA). For efficient functioning and transportation a protein shell – a caps id covers them. Along with biocommunicators, there are transposons. *Transposons* are DNA regions of organisms capable of movement (transposition) and reproduction within the genome. Transposons, also known as jumping genes, and are examples of mobile genetic elements. Transposons are by no means "genetic parasites."

That is why the overwhelming part of the human genome is non-coding protein.

This is essentially the "language of the genes."

Below we will show the consistency of the nano-model theory of genome functioning in case of DNA molecules using the example of the spatial-structural organization of RNA molecules, which clearly shows the importance of their volumetric (3 D) organization for performing biological functions.

The sequence of nucleotides (primary structures) determines the secondary structure of RNA, which determines the tertiary structure of loops consisting of unpaired bases and open sections of the chain, held in some kind of fixed state, about each other. Such bare areas are potential points through which t- RNA can specifically interact with other nucleic acids (for example, the interaction of t-RNA with rRNA or m-RNA), and they contain new possibilities used in the processes of encoding or transferring information in living systems that are not inherent in destructured single-stranded strands or ideal double helices. The same is true for the three-dimensional structure (3D) of DNA molecules. Like t-RNA, its function largely depends on the three-dimensional structure.

Scientists have discovered an unusual form of DNA in human cells. Its shape is not classical but in the form of a knot. It became known that the previously discovered spiral (more precisely, in the form of a double screw) DNA structure is not the only one in our body. This type of DNA could only have artificial origin. The structure in its structure resembles a knot of four threads, connected in a very intricate manner. In addition, the knotty structure of DNA is capable of forming and decaying during a person's life.

Let's discuss the issues of epigenetics, which have become an excellent confirmation of our genetic theory. Arthur D. Riggs introduced the most commonly used definition of epigenetics in the 90s of the XX century and formulated it as "the study of mitotically and /ormeiotically inherited changes in gene function that the changes in the sequenced DNA cannot explain.

The molecular basis of epigenetics is quite complex even though it does not affect the primary structure of DNA but changes the activity of genes. This explains the expressiveness of the genes necessary for their activity in differentiated cells of a multicellular organism. A feature of epigenetic changes is that they don't disappear during cell division. We know that most epigenetic changes are manifested only within the life of one organism. At the same time, if a change in DNA occurs in a sperm or egg, then some epigenetic manifestations can be transmitted from one generation to the next.

Our nano-model theory of the functioning of the genome perfectly reflects the numerous processes occurring at both the cellular and organismal levels. Genes functioning according to the principle of nano-models are, in fact, a kind of copy of the macrocosm. Depending on the adequacy of its reflection at the cellular level, it is possible to judge the level of quality of information perception from the body. The well-known expression, "The Brain is in the World, and the World is in the Brain", becomes fully explainable thanks to the above scientific data.

a) Functioning of protein-coding genes in the light of the modern genetic theory of genome functioning

We know that in the human genome, a small part of genes (according to some sources, 1.5%) are protein-coding. But even the functional activity of these genes cannot be logically and substantiated scientifically within the framework of only the concept of the genetic code.

For protein biosynthesis, the following processes are necessary:

1. *Transcription* (from Latin transcription – rewriting) – the process of RNA synthesis using DNA as a matrix, occurring in all living cells. In other words, it

is the transfer of genetic information from DNA to RNA.

2. *Formationofmature mRNA.*
3. *Translation* (from Latin translation – transfer, movement) – the process of protein synthesis from amino acids on the matrix of informational (matrix) RNA (i-RNA, m-RNA), carried out by the ribosome.

At the stage of mature mRNA formation, the principles of the nano-model theory of genome functioning operate.

In addition, polyribosomes synthesize a protein that is not ready in a functional aspect (with a secondary, tertiary, or even a quaternary structure), but only its primary structure (a polypeptide chain consisting of the corresponding amino acid residues). After leaving the endoplasmic reticulum, the production of ready-made and functionally complete proteins is carried out in the Golgi apparatus of the cell. This process also takes place due to the nano-model organization of the genome.

Thus, we can conclude that information is not completely embedded in the gene responsible for its synthesis; moreover, mRNA does not carry all the information. The rRNA, included in the protein synthesizing ribosome, can carry part of the decisions about the biological activity of the produced protein. The genes responsible for the synthesis of rRNA in the cell nucleus (in eukaryotic cells) in fact are regulatory in the production of a protein, and the protein that synthesizes the gene carries "raw" information about the sequence of amino acid residues in the produced protein.

According to our viral theories, biocommunicators contained in large quantities in the Golgi apparatus control the processes of formation of already functionally active proteins (4D, a bulky macromolecule in motion).

V. Differentiation of Cells in Multicellular Organisms: Formation of Higher Nervous Activity and Immune System in Human

An organism (cell) has a main and acquired genome. This fact sheds light on many currently unsolved scientific issues and, first of all, on aspects of the genetic level of the organism's development .In turn, it becomes clear how and what molecular mechanisms carry out the differentiation of cells in multicellular organisms and individual development (ontogenesis). Scientifically fully substantiated, for example, the emergence of highly specialized functions in neurons of the human brain and the manifestation of various functions of higher nervous activity at the organismal level.

Therefore, it is not surprising that geneticists studying the human genome struggle to find the genetic traits that led to the increase in the brain and, possibly, its more efficient work. We pin particular hopes on the comparison of the human genome with the chimpanzee genome, which allows us to immediately exclude from consideration that 98%of the genome that are identical in our species. Somewhere out there, in the remaining two percent, the secret of human uniqueness is encrypted. It remains to understand where and how.

Nowadays, the biological theories we have proposed are capable of explaining all this scientifically. The behavior and mental abilities of humans are at a qualitatively new level compared to those of the monkeys. It is reasonable to assume that these differences are genetic.

As a result of serious research, scientists have proven that during the origin of man, there was no universal and large-scale accumulation of amino acid changes in the genes involved in the work of the nervous tissue.

Yet, after all, people are still smarter than chimpanzees, and our relative brain size is larger! "As cattering of genes encode the development of our mental abilities(changes in their sequence or level of expression), and these changes do not affect the average characteristics of all genes of the nervous system".

And according to our proposed classification of the genome(based on our viral theories) and the nano-model theory of the functioning of the genome, we can explain all this very logically and scientifically. The thing is that modern classical genetics study only the main genome of the organism, that is, the genes obtained from the parental germ cells (egg and sperm). However, for the functioning of highly specialized cells (such as, for example, brain neurons), those genes that were received from parents by vertical transmission (from germ cells as a result of the formation of a zygote)are not enough. According to our viral theories, for a full-fledged perception of information, of long-term memory and, the functioning of the somatic nervous system, the body in the process of ontogenesis must additionally receive a set of genes through horizontal gene transfer. Which occurs in the perinatal and postnatal periods of the individual development of the organism. For most of the highly specialized cells in the human body (or other multicellular organisms) to begin to perform their intended functions fully, it is not enough just to "switch on" (express) groups of genes and "switch off" other groups of genes of the genome. If everything were so simple, the geneticists would have long ago found many genes from the main human genome, which are inherent only in us (humans) and distinguish us, for example, from monkeys. The fact that a person in terms of his level of development issuperior to other species of animals is beyond doubt. And these differences are due precisely to the receipt of additional genes already in the process of human ontogenesis. The human genome creates the prerequisites (favorable conditions) for the

implementation of this process, and this requires a small number of genes. By the way, according to modern genetic research, this is what distinguishes us, for example, from chimpanzees in terms of the genome.

a) *Formation of the immune system as evidence of genome plasticity*

We know that during the formation of acquired immunity, the cells can acquire new genes that are not characteristic of the human genome. This process happens depending on the influence of the environment on the body – what viruses and foreign agents will inflect on the body during ontogenesis. After all, all sane scientists understand that at the moment of fertilization, it is not known yet in what conditions the individual development of the organism is proceeded. We inherit only a part of the immune system, and therefore the immune system of humans and many species is a dynamically changing system. And this is another confirmation of the inconsistency of the concept of totipotency of all cells or even some cells of a multicellular organism and indicates the validity of the genome plasticity.

Conclusions to this part of the scientific article

1. Along with the main genome, a cell has an acquired genome. In other words, the genome is plastic.
2. The functioning of the genome in the overwhelming majority of cases is based on the activity of biological nano-models.
3. The processes of cell differentiation in multicellular organisms, the formation of the functions of higher nervous activity in humans, and many other biological phenomena are closely related to horizontal gene transfer during the ontogenesis of the organism.
4. Taking into account our classification of the genome into main and acquired, as well as our nano-model theory of the functioning of the genome, it is possible to achieve a complete understanding of various biological processes occurring at the genetic, cellular (biochemistry, biophysics) and organismal (physiology) levels of the organization, inhealth and pathologies. Therefore, we can talk about another revolution in biology, which will affect such practical areas as medicine[9], [10], agriculture, bioengineering, ecology, psychology, sociology and the like[7], [8].

VI. Scientific and Philosophical Concept of the Unity of the World

Philosophy is a form of discovering of the world, which develops a system of knowledge about the most general characteristics, generalizing concepts and fundamental principles of reality (being) and cognition, human being, about the relationship between man and the world[5]. The tasks of philosophy throughout its history included both the study of the universal laws of the development of the world and society and the study of the very process of cognition and thinking. Among the ultimate philosophical questions are, for example, the questions "Is the world cognizable?", "Does God exist?","What is truth?", "What is Man?", "What is primary – matter or consciousness?" and others[2]. Here we discuss and try to give a scientifically substantiated answer to the question - "What is a primary matter or consciousness?" and to find out how appropriate this question is, if it is not artificial and unnecessary for the development of philosophy and science in general. It is very important for the further intensive and correct development of neurobiology.

For many centuries the materialists and idealists have been trying to find approaches to the structure of the universe. According to the materialistic approach, the matter is primary. According to the idealists the idea is primary.

Idealism is a mode of explanation that considers the spiritual to be before the material, while the materialists say the material to be before the spiritual. Idealism believes that everything material supposedly depends on something spiritual, while materialism claims that everything spiritual depends on the material.

Materialism seeks to explain these issues in terms of the material world, with the help of factors that can be checked, understood, and controlled.

For idealism, there is always a higher, supposedly more real immaterial world, which precedes the material world, is its ultimate source and cause, and to which the material world is subordinate. For materialism, on the contrary, there is only one world – the material world, the one in which we live.

Below are the presented main provisions of idealism and materialism, as well as their opposite.

We can formulate the main points put forward by any form of idealism as follows:

1. Idealism claims that the material world depends on the spiritual.
2. Idealism asserts that spirit, mind, or idea can and does exist separately from matter.
3. Idealism asserts that there is a realm of the mysterious and unknowable, "above" or "beyond" or "behind" that which can be established and known through perception, experience, and science.

a) *In turn, we can state the main provisions of materialism as follows*

1. Materialism teaches that the world is material by its very nature, that everything that exists appears based on material causes, arises, and develops by the laws of motion of matter.
2. Materialism teaches that matter is an objective reality that exists outside and independently of

consciousness and that the spiritual does not exist separately from the material. Still, everything spiritual or conscious is a product of material processes.

3. Materialism teaches that the world and its laws are fully cognizable, and although much may be unknown, there is nothing that we cannot cognize.

As you can see, all the basic tenets of materialism are opposite to the tenets of idealism. The opposition of materialism to idealism, expressed in its most general form, is not the opposition of abstract theories about the nature of the world but between different ways of understanding and interpreting any question. So, it is so important.

Based on the latest advances in cell biology and neuroscience, we propose a new scientific and philosophical concept of the unity of the universe.

Because new biological theories (viral and genetic theories) serve as a base for our scientific and philosophical concept, then the method we use to create new biological theories is the scientific method. Biological theories published in 2018 – 2019. To do this, we applied scientific meta-analysis. We analyzed the reliable scientific information, and based on the synthesis of this scientific information, we have new progressive and innovative scientific theories, and in the future, a new scientific and philosophical concept of the unity of the universe.

Everything is known to humanity and at the same time that a person can perceive with his senses (receptors) and through modern equipment can be material. And all the dreams, ideas of people that today the human senses(receptors) or modern technical means do not perceive are ideal. However, with the development of science, more and more concepts and phenomena pass into the material world. For example, with the discovery of electromagnetic radiation, it became clear that many previously mysterious-sphenomena have a material basis. With the development of genetics, it became known that the material carriers of genetic information are nucleic acids (DNA, RNA). With the development of microbiology and virology, the material causes (pathogens) of various infectious diseases, that we previously interpreted as the action of "evil spirits" on the body, became known.

Our works on neurogenetics and neurophysiology have shown that the DNA of viruses (biocommunicators) is responsible for the long-term memory and the formation of higher nervous activity in humans and animals, evidenced by our biological theories (the viral theory of information perception, the viral theory of memory formation, the viral theory of the functioning of the somatic nervous system, the nano-model theory of the functioning of the genome, and others). This discovery, together with our other biological theories, pushed us to create a new philosophical concept of the unity of the universe. In other words, what we previously considered ideal (thoughts, emotions, mind, and consciousness of a person) today we already begin to explain at the level of DNA/RNA macromolecules and proteins.

Thus, over time, everything, the ideal, is transformed into a material (Figure 1). However, if we hypothetically imagine that everything that exists in nature is material, then it, as a separate category, will automatically cease to exist for the simple reason that it will lose its opponent. Everything that we will have will become one. Therefore, the division into material and ideal will not make sense. And the question - "what is primary, matter or idea?" will lose its significance.

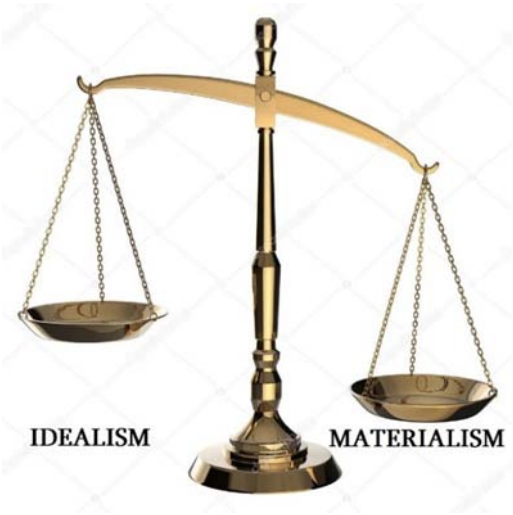

Figure 1: Philosophical balance of Vahram Sargsyan With the development of science, many "mysteries of nature" or "mystical" find their materialistic confirmation

It turns out that in NATURE, everything is ONE[13]. It indicates that the division into material and ideal was artificial and meaningless. In addition, the need of a person, to study all phenomena from the position of his feelings, resulted in such a division of the world, or in other words, the perception of the world from the side of a person. A person is the center of the Universe and the Judge, who determines what is considered material and what is ideal. After all, as noted above, "what a person can perceive with his senses (receptors) and through modern equipment is considered to be material." But any sane scientist and philosopher will agree that such an understanding of the universe cannot be objective. It is subjective because the main criterion is a person's feelings or his instrumental methods of registration, the data (indicators) of which are ultimately again evaluated and interpreted by a person.

The dualistic approach has also exhausted itself and is scientifically unsound.

VII. Conclusion

The struggle and contradictions between the materialistic and idealistic approaches with the emergence of new biological theories and the philosophical concept of the unity of the universe are over.

We can only talk about the existence of different hierarchical levels in a single universe. If the smallest unit is conventionally considered the electron, and the largest – the Universe, then these hierarchical levels (taking into account biological systems) can be conventionally represented as follows:

electron – atom – molecule – cell organelle – cell – tissue – organ – organ system – organism (for example, man) – society – biocenosis –biogeocenosis– planet Earth – Solar system – Milky Way Galaxy – Universe.

As noted at the beginning of the scientific article, the "mind-body problem" is an issue of the relationship of mental phenomena to physical ones. Thanks to the results of our many years of work and the creation of new biological theories and the scientific and philosophical concept of the unity of the universe, it became clear that the mind (mental phenomena) and the body (physical) are only different hierarchical levels in the ONE WORLD. It explains how objectively recorded brain processes generate a psyche, supposedly devoid of the attributes of materiality. After we have clarified the numerous functions of biocommunicators in Nature, learned about the new classification of the genome and the nano-model genetic theory of the functioning of the genome, the mechanisms of the formation of the "inner world" or the human psyche are small copies of society. Viruses (biocommunicators) are migratory organelles of eukaryotic cells, and they perform many vital functions. Biocommunicators are essentially the foundation of life. Now it is clear what forms the "inner world" of a person, and this is very important for understanding the processes in the formation of society[11]. However, we should not forget about the influence of the external environment in the forming the human psyche. *The sensorimotor activity of a person provides the connection between the mind and the body.* It shows how the human psyche and the human impact on the world around us. The" inner world "of each person should normally be a small copy of the general "big world".

Thus, at this stage of the historical development of humanity, it is BIOLOGY that has become the driving force of scientific and philosophical progress. At an earlier stage in the development of mankind, this role was played many times by Philosophy and Physics. Today we can even talk about another revolution in biology, which will have a very positive effect on the development of such practical areas as medicine, pedagogy, agriculture, ecology, sociology, psychology, bioengineering, and the like.

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