SPINAL CORD of DNA-molecule

At the heart of, what we name as common sense, there is the principle, according to which, we prefer, from many probable explanations other things being equal, the simplest explanation. And it, basically, is correctly because process of cognition occurs from simple to complex. But, unfortunately, in parallel sciences this principle is observed very seldom. So, for example, two parallel sciences – the physics and the chemistry, investigate the same object – substance. Thus, the physicists should give correct model of a structure of atoms, whereupon the chemists, using this model, should give correct model of a structure of molecules, including, the correct spatial structure of the elementary cell of life, i.e. a structure of the molecule of desoxyribonucleic acid (DNA). After that chemists and physicists should give the unequivocal answer to a question – what is LIFE. It is the main question for our civilization.

Today scientists consider, that SOMETHING named as the LIFE, should meet several requirements. The life is necessarily process, i.e. functioning due to an exchange of substance and energy with environment. Alive objects are capable to duplication and reproduction of similar to themselves. Besides, all alive objects are capable to progressive evolution in community of the same objects that is due to presence at them the biological memory, capable to remember attributes, acquired during natural selection in accordance with theory by C. Darwin. And all set of conditions should be carried out, since any of them separately does not make object alive.

Thus, in spite of the fact that all processes in alive organisms are chemical, however the taken separately chemical reaction is not a life, as well as "reproduction" of itself similar.

For example, growth of crystals is nothing else, than the self-replicating of similar compounds and structures. The simple exchange by substance and by energy with environment, as, for example, simple chemical catalysis, too is not a life.

Only when there is the biological memory, which gives an opportunity to accumulate the hereditary information and to transfer it further, it is possible to speak about a life.

After discovering in 1953 by Jim Watson and Francis Crick of a double spiral of DNA, the main role of this molecule in preservation of the genetic information became clear. Though the molecule of DNA was known long before 1953. She was found in cellular nucleus by the Swiss doctor I.F.Misher in 1868.

DNA is polymer. Chemists name polymeric molecules the long chains, which consist of identical (homopolymers) or different (heteropolymers) links – monomers.

The basis of DNA-polymer is the molecule of carbohydrate – pentose. Usually in molecules of carbohydrates (monosaccharides) the ratio of atoms of hydrogen and oxygen is the same as in water, – 2:1, therefore the general formula for carbohydrates looks as $C_nH_{2n}O_n$.

Carbohydrate of DNA is an exception to the rule. In the monomer of DNA there is absent one atom of oxygen, therefore it was named, as deoxygenating ribose – desoxyribose or D-ribose. The chemical formula of monomer of D-ribose – $C_5H_{10}O_4$. To everyone monomer of D-ribose in polymer of DNA is attached one of four nitrogenous heterocyclic base – an adenine (A), a guanine (G), a thymine (T) or a cytosine (C).

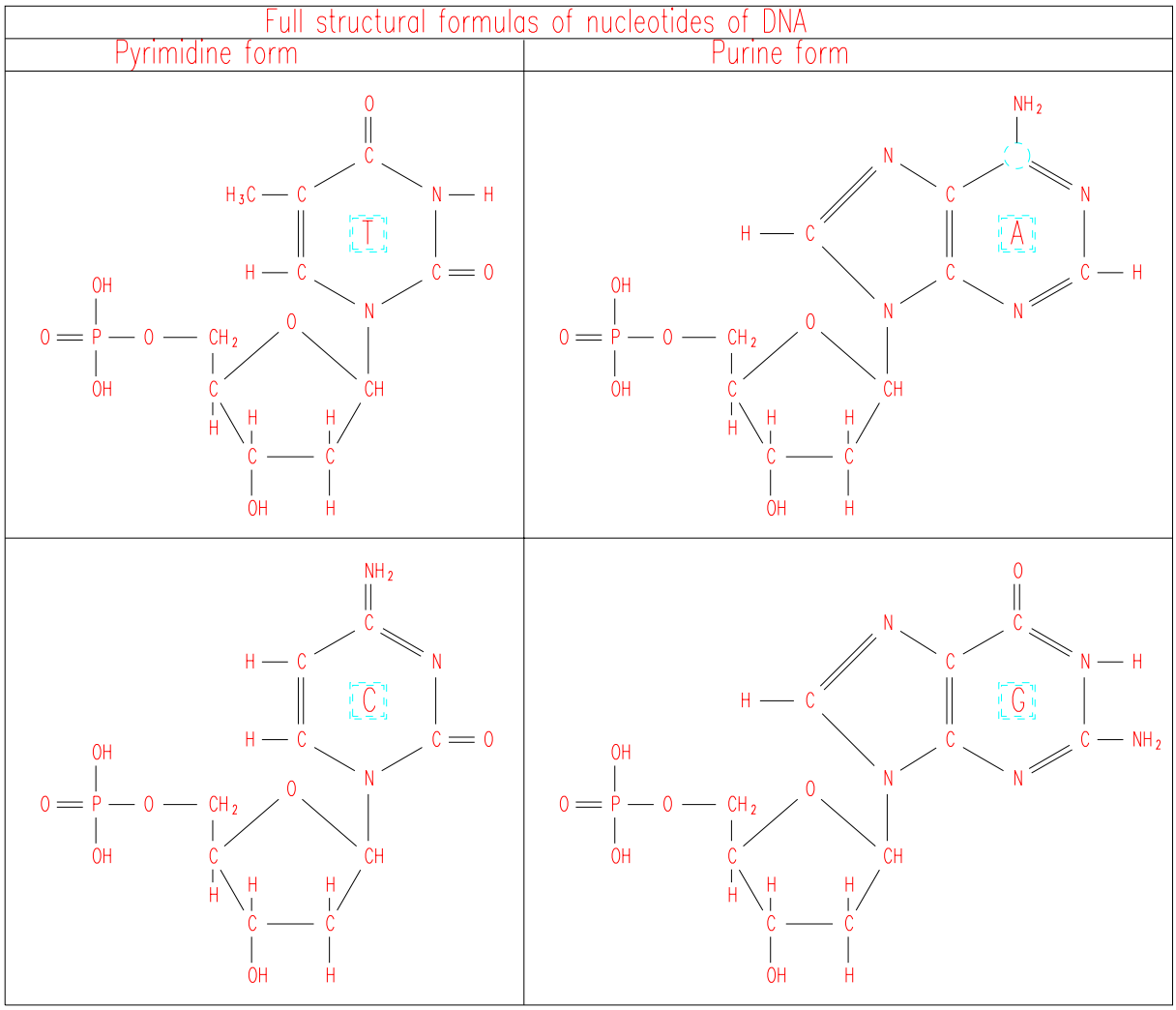
Chemists name the heterocyclic bases the rings, which consist of carbon and other atoms.

Connection of one nitrogenous basis (A, G, C or T) with a monomeric link of D-ribose is named, as a nucleoside.

The nucleoside together with the residuum of phosphoric acid H_3PO_4 is named as a nucleotide. It is a separate link of nucleotidic chain of DNA – deoxyribonucleotide.

In the table 1 the full structural formulas of all four nucleotides of DNA are shown.

Table 1



Letters in squares designate type of the nitrogenous heterocyclic basis:
A – adenine, the chemical formula of monomer $C_5H_5N_5$;
G – guanine, the chemical formula of monomer $C_5H_5N_5O$;
T – thymine, the chemical formula of monomer $C_5H_6N_2O_2$;
C – cytosine, the chemical formula of monomer $C_4H_5N_3O$;

Looking at structural formulas of nucleotides of DNA, even the experienced chemist cannot explain for you, how atoms of nucleotide are located in space. In these pictures, the main chemical connections between atoms and groups of atoms are shown only.
In researches by Jim Watson and Francis Crick, it has been found, that the DNA represents the right spiral of two single polymeric strings. The nitrogenous bases in strings of a double spiral are located in such a manner, that opposite to an adenine (A) the thymine (T) and opposite to guanine (G) the cytosine (C) is located always.
Jim Watson and Francis Crick have determined, that "A" in one string is connected with "T" in a parallel string, just as "G" is connected with "C", with hydrogen bonds.
However, there are also exceptions. So, for example, the DNA of some viruses represents a single spiral from nucleotides, which are located one after another.

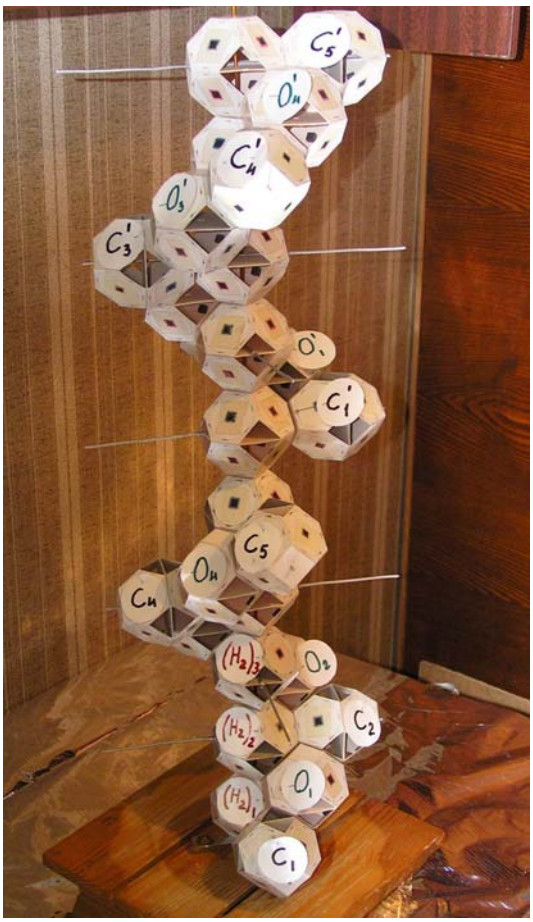


Fig. 1
Breadboard model from two monomer of D-ribose

We have made attempt to determine a location of each atom in nucleotide of single spiral of DNA with the help of our polytronic model.
About this model of structure of substance you can read in our site:
http://vlamir43.narod.ru/index.html (in English)
or
http://vlamir43.narod.ru/polytronic_physics.html (in Russian).
At modelling we use simple breadboard models of atoms and molecules, made of a heavyweight paper and small magnets, and also computer 3D-modelling.
First of all, we have assembled the spatial model of a single spiral from monomers of D-ribose.
In fig.1 the paper breadboard model of this spiral from two monomer of $C_5H_{10}O_4$ is shown.
In fig.2 one monomer $C_5H_{10}O_4$ is shown, which is executed in a computer.
In this figure, each molecule of hydrogen is assembled from eight blue rings, each atom of carbon – from eight red rings, and each atom of oxygen – from four green rings.
In fig.3 the drawing of the single spiral from four monomer of D-ribose is shown.

As it can be seen in all three figures, molecules of hydrogen form the central rod, around of which, on one screw line, atoms of carbon and atoms of oxygen are located serially.
Between last atom of carbon of given (current) monomer of D-ribose and first atom of carbon of next monomer of D-ribose the vacancy is present. The atom of phosphate group or atom of the nitrogenous basis can occupy this vacancy.
The screw groove in width approximately 0.6nm is intended for "setting" of phosphate groups and nitrogenous bases.
Phosphate groups settle down in the screw groove between the fifth atom of carbon of given (current) monomer of D-ribose and the third atom of carbon of the next monomer of D-ribose.
Thus, the phosphate groups, as though, partition off a screw groove with dams and "sew" separate monomers of D-ribose in the one-dimensional spiral.
Hence, the residuary free parts of a screw groove will be occupied with the nitrogenous bases (A, G, C or T).
Thus, the ends of each nitrogenous basis are connected at once to two energy sources.

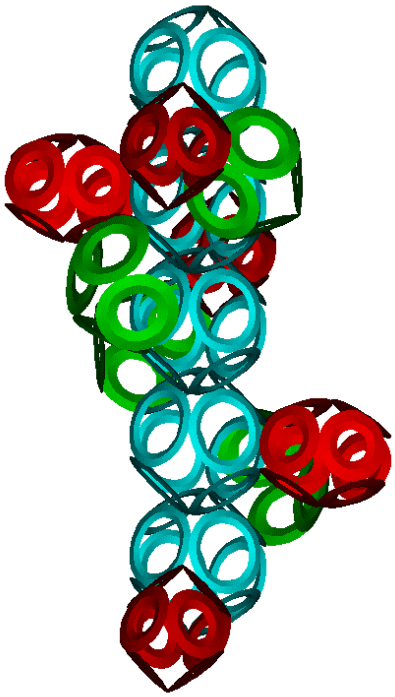


Fig. 2
Computer model of monomer of D-ribose

Cells of an alive organism use energy of ATP.

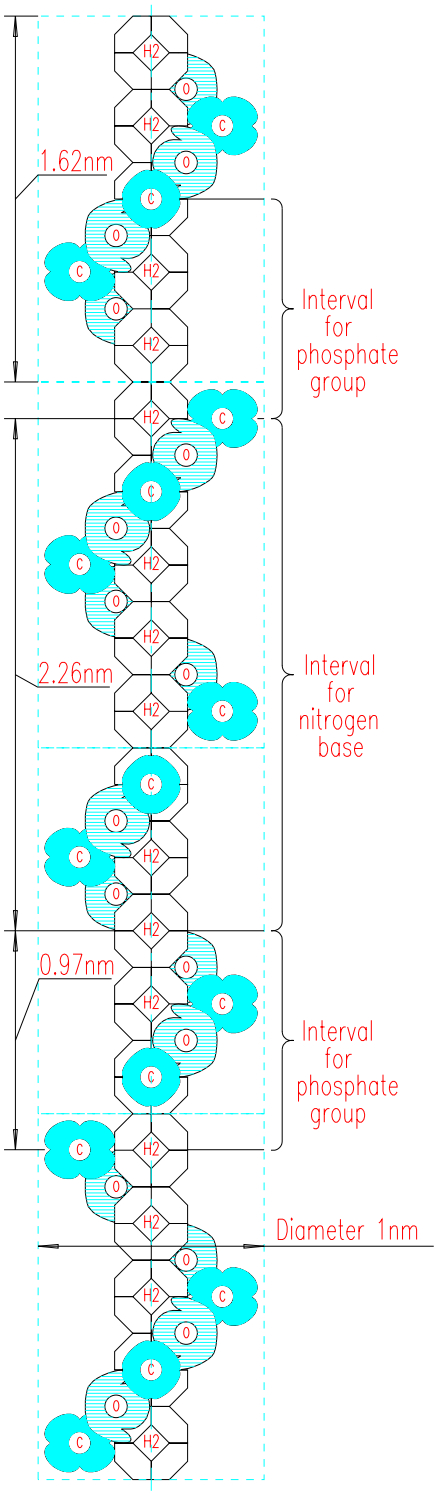


Fig. 3
Single spiral from four monomer of D-ribose

ATP – it is adenine nucleotide (adenosinethriphosphate), in which, to own phosphate group are attached two the same phosphate groups.
Additional charge of these energy sources is fulfilling, when it is required, mitochondrion, which live in cytoplasm of cell.
The design of a one-dimensional spiral of D-ribose is very similar to an element of the electronic computer. The rod of molecules of hydrogen carries out function of transfer of the information, atoms of carbon carry out a role of stacks, i.e. these are elements of internal operative memory, and, at last, atoms of oxygen carry out a role of sluices for connection to peripheral devices with the purpose, for example, start of process of copying.
Now we would like to pay your attention, that molecules of pure water at freezing from a steam phase form the same strings of hydrogen rods and the chains of atoms of oxygen, which are located around of them.
The result of this process is evidently seen in the correct geometrical form of snowflakes. Anybody till now has not counted up, how many geometrical versions of snowflakes are created by the nature.
If to take into account that fact, that at freezing of water, ten crystal updating of ice can be formed, then it is possible to assume, that the structured water is the main intellectual component of all alive matter.
Hence, the polymeric chain of D-ribose carries out a role of spinal cord in DNA-molecule.
In many sciences it is possible to find huge amount of proofs, that water possesses intellectual qualities.
We shall remind you only four of them:
– grey substance of our brain, i.e. neurons, in 90% consist of the structured water;
– our blood in 80% consist of the structured water;
– water from melted snow and a water processed in a magnetic field, possess curative properties;
– under influence of classical music, the crystals of water get amazing beauty form, and, on the contrary, under action of heavy music they become ugly.

And now reflect above the question – how a long time The Intelligent Earth will be capable to bear sufferings from this greedy monster, which cynically names itself as Homo sapiens?

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