



**Наука - это интересно!**



# Шаповалов Владимир Николаевич

- ✓ кандидат физико-математических наук, доцент
- ✓ Калмыцкий государственный университет
- ✓ факультет математики, физики и информационных технологий
- ✓ кафедра теоретической физики

random]plasmid

Deoxyribonucleic acid (DNA) is a nucleic acid that contains the genetic instructions used in the development and functioning of all known living organisms and some viruses. The blueprints or a recipe, or a code, since it contains the instructions needed to construct other components of organisms that carry this genetic information are called genes. But other DNA sequences have structural purposes, or are involved in regulating the use of this genetic information.

Chemically, DNA consists of two long polymers of simple units called nucleotides, with backbone made of sugars and phosphate groups joined by ester bonds. These two strands run in opposite directions to each other and are therefore anti-parallel. Attached to each sugar is one of four types of molecules called bases. It is the sequence of these four bases along the backbone that encodes information. This information is read using the genetic code, which specifies the sequence of the amino acids within proteins. The code is read by copying stretches of DNA into the related messenger RNA in a process called transcription.

Within cells, DNA is organized into long structures called chromosomes. These chromosomes are duplicated before cells divide, in a process called DNA replication. Eukaryotic organisms (animals, plants, fungi, and protists) store most of their DNA inside the cell nucleus and some of their DNA is contained in mitochondria or chloroplasts. In contrast, prokaryotes (bacteria and archaea) store their DNA only in the cytoplasm. Within the chromosomes, chromatin proteins such as histones compact and organize DNA. These complex structures guide the biochemical processes of DNA replication and RNA transcription.

DNA is a long molecule that is made up of two strands that are twisted around each other. The strands are made of a sugar-phosphate backbone and nitrogenous bases. The bases are attached to the sugar-phosphate backbone and are held together by hydrogen bonds. The sequence of the bases along the strands is the genetic code. The genetic code is the set of rules that defines how sequences of nucleotide bases (the DNA alphabet) specify the amino acid sequences of proteins. The genetic code is universal, meaning that it is the same in all organisms. The genetic code is also degenerate, meaning that some amino acids can be specified by more than one codon. The genetic code is also non-overlapping, meaning that the bases are read in a continuous sequence without overlapping. The genetic code is also commaless, meaning that there are no commas or other markers between the codons. The genetic code is also unambiguous, meaning that each codon specifies only one amino acid. The genetic code is also redundant, meaning that some amino acids are specified by more than one codon. The genetic code is also flexible, meaning that it can change over time. The genetic code is also dynamic, meaning that it can be modified. The genetic code is also complex, meaning that it is a highly organized system. The genetic code is also beautiful, meaning that it is a masterpiece of nature's design.

DNA exists in many possible forms. The most common form is B-DNA, which is a right-handed helix. Other forms include A-DNA, which is a compact, wide, shallow groove helix, and Z-DNA, which is a narrow, deep, sharp groove helix. The different forms of DNA are determined by the sequence of the bases and the environment. The different forms of DNA have different properties and functions. The different forms of DNA are also important in the study of DNA structure and function.

The first published reports of DNA structure were made by Watson and Crick in 1953. Their model was based on the work of other scientists, including Rosalind Franklin and Maurice Wilkins. Watson and Crick's model was a double helix, which is a structure in which two strands are twisted around each other. The strands are made of a sugar-phosphate backbone and nitrogenous bases. The bases are attached to the sugar-phosphate backbone and are held together by hydrogen bonds. The sequence of the bases along the strands is the genetic code. Watson and Crick's model was a major breakthrough in the study of DNA structure and function.

Although the B-DNA form is the most common, other forms of DNA are also found in cells. The A-DNA form is a compact, wide, shallow groove helix. The Z-DNA form is a narrow, deep, sharp groove helix. The different forms of DNA are determined by the sequence of the bases and the environment. The different forms of DNA have different properties and functions. The different forms of DNA are also important in the study of DNA structure and function.

Compared to B-DNA, the A-DNA form is a compact, wide, shallow groove helix. The Z-DNA form is a narrow, deep, sharp groove helix. The different forms of DNA are determined by the sequence of the bases and the environment. The different forms of DNA have different properties and functions. The different forms of DNA are also important in the study of DNA structure and function.



# Батырев Александр Сергеевич

- ✓ кандидат физико-математических наук, доцент
- ✓ Калмыцкий государственный университет
- ✓ факультет математики, физики и информационных технологий
- ✓ кафедра теоретической физики





# Михаляев Бадма Борисович

- ✓ кандидат физико-математических наук, доцент
- ✓ Калмыцкий государственный университет
- ✓ факультет математики, физики и информационных технологий
- ✓ кафедра теоретической физики
- ✓ заведующий кафедры теоретической физики





# Соловьев Александр Анатольевич

- ✓ астрофизик, доктор физико-математических наук, профессор
- ✓ поэт, переводчик, член Союза российских писателей
- ✓ заслуженный деятель науки Республики Калмыкия
- ✓ заведующий лабораторией физики Солнца Пулковской астрономической обсерватории



$$P_2(x_2) = \int \dots$$
$$\sum_{k=0}^n P(x) = 1$$
$$P(x) = \begin{cases} 0 & \text{for } |x| > a \\ \frac{P(x)}{2} & \text{when } |x| < (x-a)^n = \sum_{k=1}^n \frac{A_k}{(x-a)^k} \end{cases}$$
$$\binom{A}{k} \binom{B}{n-k} = \frac{\binom{A+B}{n}}{(A+B)}$$

A person is shown in profile, working at a computer workstation with two monitors. The scene is overlaid with various mathematical formulas and diagrams. On the left, there are equations for work done by a force:  $W = \int_{r_1}^{r_2} \frac{dW}{dr} dr = -\int_{r_1}^{r_2} \frac{d}{dr} \left( \frac{1}{r} \right) dr = -\left[ \ln r \right]_{r_1}^{r_2} = -\ln \left( \frac{r_2}{r_1} \right)$ . Below this is a polar coordinate diagram with angles  $\theta = \pi/6$  and  $\theta = 4\pi/3$ . A table lists values for  $\theta$ ,  $r$ , and  $\sin \theta$ :

$\theta$	$r$	$\sin \theta$
$7\pi/6$	$-1/2$	$1/2$
$4\pi/3$	$-\sqrt{3}/2$	$1/2$

Other formulas include  $R(T_3 - T_2) = -nR \left[ \frac{P_2 V_1}{nR} - \frac{P_1 V_2}{nR} \right]$ ,  $R(T_3 - T_2) = \frac{3}{2} nR \left[ \frac{P_2 V_1}{nR} - \frac{P_1 V_2}{nR} \right]$ , and  $\Delta U = nC_V \Delta T = nC_V (T_3 - T_2)$ . A graph shows  $\Delta U$  vs  $T$  with points  $(0,0)$ ,  $(T_1, \Delta U_1)$ , and  $(T_2, \Delta U_2)$ . The text "Because of the work done by the gas it retraces its path" is visible in the background.

$$\delta(x) = \lim_{\epsilon \rightarrow 0} \frac{1}{\epsilon} P(x)$$
$$\sum_{n=0}^{\infty} \frac{(2n-1)!!}{(2n)!!} \sin^{2n}(x)$$
$$\frac{a}{(a^2 + b^2)^n}$$
$$\frac{1}{x^2} = \lim_{\epsilon \rightarrow 0} \frac{1}{x^2 + \epsilon^2}$$
$$P(x) = \dots$$



игра-соревнование

Любите физику, друзья!



**жюри**



**Конкурс  
№ 1**



**«Зелёные учёные»**



**ФИЗИКИ**

**Конкурс  
№ 2**

**ЛИРИКИ**



Конкурс № 3





Конкурс  
№ 4



Конкурс  
№ 5



HELP

Игра со  
зрителями



Наука -  
это интересно!



# Россия



награждение  
команд

страна героев, страна мечтателей, страна учёных!

