**Nucleotides**

1. What is nucleotide? What parts does a nucleotide contain?
2. What is nitrogenous base? What is difference between purine and pyrimidine nitrogenous bases?

Draw purine and pyrimidine nitrogenous bases. Number the atoms in the rings.

1. What sugar is included in nucleotides?

Draw this sugar, number the atoms in the rings.

1. What is a nucleoside? What is the bond between sugar and nitrogenous base in the nucleoside?

Draw a nucleoside consisting of a purine nitrogenous base and deoxyribose, write the full name of this nucleoside and name of bond.

Draw a nucleoside consisting of a pyrimidine nitrogenous base and ribose, write the full name of this nucleoside and name of bond.

1. What is a nucleotide? What is the difference between a nucleotide and a nucleoside?

Make nucleotides from the nucleosides that were drawn in task 4 and write the full name and 3 or 4 letter short form of these nucleotides. What is the bond between phosphoric acid and sugar?

1. What are the functions of nucleotides?
2. Draw a nucleotide that is a source of energy. Write the full and 3 letter short form name of this nucleotide. Why does it perform an energetic function?
3. Draw one of the nucleotide second messengers. Write the full and 4 letter short form name of this nucleotide.
4. Draw dinucleotide from the nucleotides that you received in task 5. What is the bond between nucleotides?
5. What are nucleic acids? What are they made of? Can the dinucleotide drawn above (task 9) be part of DNA or RNA? Why?
6. Fill in the table:

|  |  |  |
| --- | --- | --- |
|  | DNA | RNA |
| Nitrogenous base |  |  |
| Sugar |  |  |
| Number of chains |  |  |
| Weight |  |  |
| Structure |  |  |
| Localization |  |  |
| Function |  |  |

1. Test



1. Match the selected fragments and their names:
2. Sugar
3. Hydrogen bonds
4. Nucleotide
5. Nitrogenous base
6. Phosphate group
7. Select missing words from the list below.

A single strand of DNA is a polymer of \_\_\_\_\_1\_\_\_\_\_\_ joined \_\_\_\_\_2\_\_\_\_\_\_ between the \_\_\_\_\_3\_\_\_\_\_\_  of one and the \_\_\_\_\_4\_\_\_\_\_\_ of the next to form a “backbone” from which the \_\_\_\_5\_\_\_\_\_\_\_ bases stick out. In its natural state, DNA has \_\_\_\_\_6\_\_\_\_\_\_  wound around each other in a \_\_\_\_\_7\_\_\_\_\_\_ . The bases on each strand are bonded to each other with \_\_\_\_\_\_8\_\_\_\_\_  bonds. Only specific bases bond with each other; \_\_\_\_\_\_9\_\_\_\_\_  bonds with \_\_\_\_\_10\_\_\_\_\_\_ , and \_\_\_\_\_11\_\_\_\_\_\_  bonds with \_\_\_\_12\_\_\_\_\_ .

1. adenine
2. double helix
3. covalently
4. cytosine
5. deoxyribose sugar
6. guanine
7. hydrogen
8. nitrogenous bases
9. nucleic acids
10. phosphate group
11. thymine
12. two strands
13. You have been presented with an image of two nitrogenous bases found in the DNA molecule. It is the base-pairing correct? What bases are shown in the picture? Is it a fragment of a DNA or RNA molecule?

