ANSWERS NUCLEIC ACID COMPARISON - V4 MHR p 224

-230

- The 2 nucleic acids are DNA and RNA. Both nucleic acids are polymers made up of repeating units called **nucleotides**. Nucleotides are used for 4 main purposes in an organism:
- To make up the nucleic acids DNA and RNA
- As chemical messengers to regulate cell activity
- To carry energy as ATP (adenosine triphosphate) and ADP
- To work as coenzymes to speed up chemical reactions

The nucleotides are slightly different in RNA and DNA.

	DNA	RNA		
Name	deoxyribonucleic acid	ribonucleic acid		
Purpose	- genetically inherited material -contains genetic information to make RNA	- instructions to make a protein		
Nucleotide Components	 phosphate (PO₄-3) deoxyribose sugar (missing an oxygen on the second carbon) contains the 4 nitrogen bases adenine, thymine, guanine, cytosine 	 phosphate (PO₄-3) ribose sugar contains the 4 nitrogen bases adenine, uracil, guanine, cytosine 		
Number of strands	double stranded helix	single stranded, not helical but has many other shapes		
Location in Cell	Nucleus of eukaryotes (cells with a nucleus) - needs to be protected from pH and enzymes in cytoplasm that can destroy it - Nucleoid of prokayrotes (cells without a nucleus like bacterial cells) - plasmids (circular DNA) of prokaryotes	There are 3 types: - messenger RNA (mRNA) travels between nucleus and cytoplasm - ribosomal RNA(rRNA) in cytoplasm - transfer RNA (tRNA) in cytoplasm		

NITROGEN BASE COMPARISON V4 - ANSWERS

The 5 nitrogen bases are adenine, thymine, guanine, cytosine and uracil. They have many similarities and some differences. The nitrogen bases are divided into 2 main categories: **purines**, which have a double ring structure, and **pyrimidines**, with a single ring structure.

GUANINE	CYTOSINE	ADENINE	THYMINE	URACIL
yes	yes	yes	yes	no
yes	yes	yes	no	yes
purine	pyrimidine	purine	pyrimidine	pyrimidine
2	1	2	1	1
3	3	2	2	2
	yes yes purine 2	yes yes yes yes purine pyrimidine 2 1	yes yes yes yes yes yes yes purine pyrimidine purine 2 1 2	yes yes yes yes yes yes yes no purine pyrimidine purine pyrimidine 2 1 2 1