

T A C G A T G C G T G A A A C

DNA Candy

Rochester City School District School 16
University of Rochester iGEM 2020

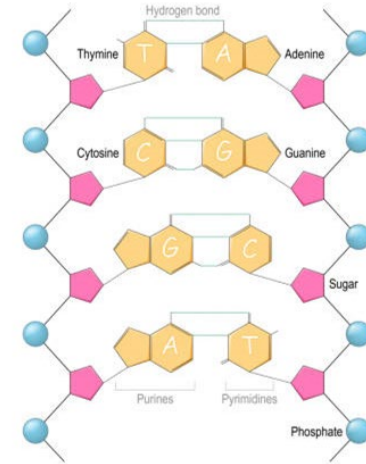


What is DNA?



DNA Basics

- Deoxyribonnucleic acid
- Tells the cells what to do

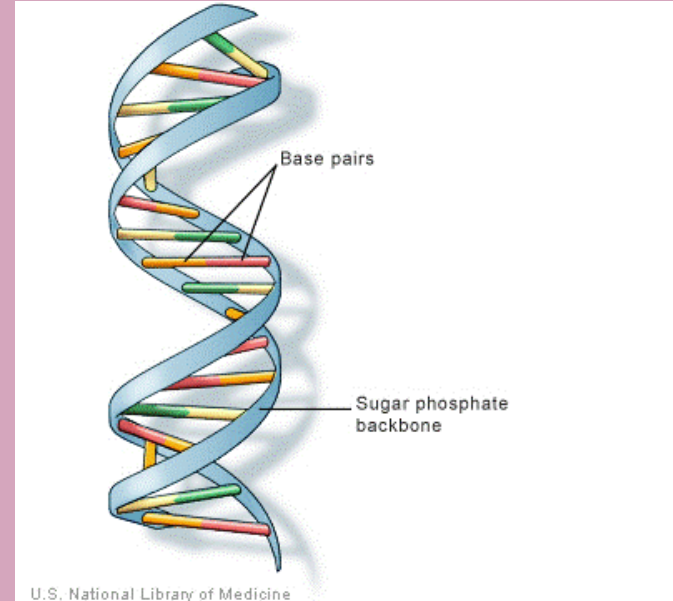


DNA is like a rule book



Nucleotides

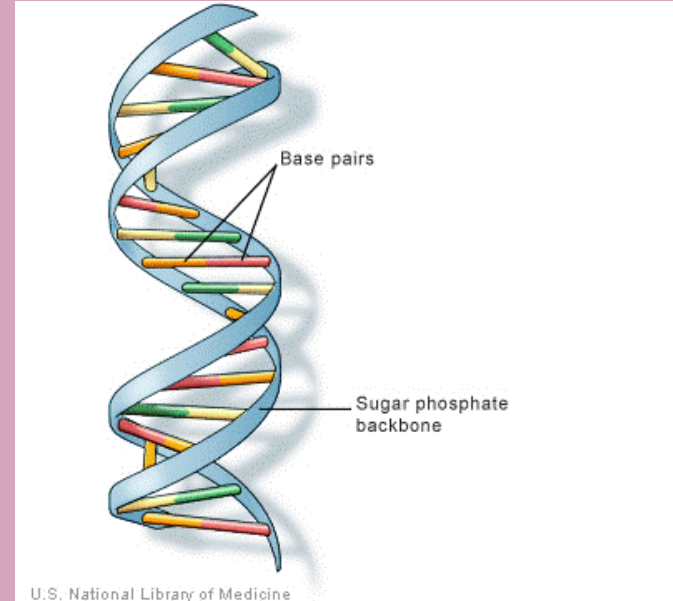
- *Alphabet* of the rule book!
- Function



Nucleotides



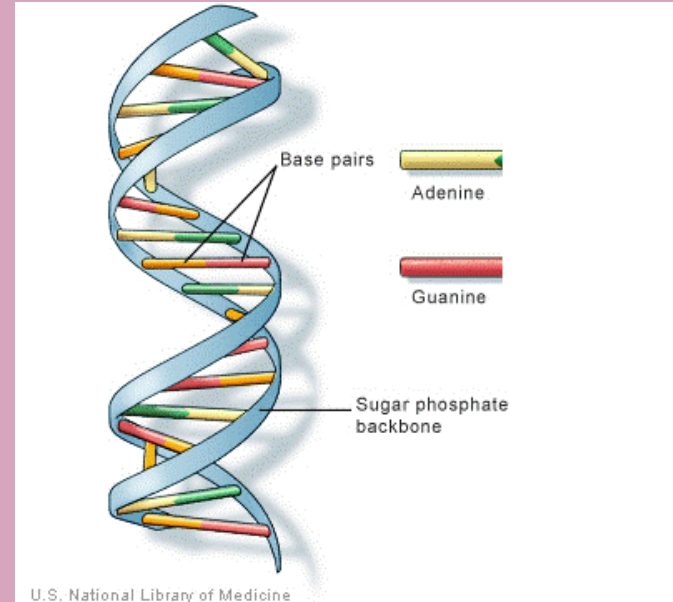
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Nucleotides

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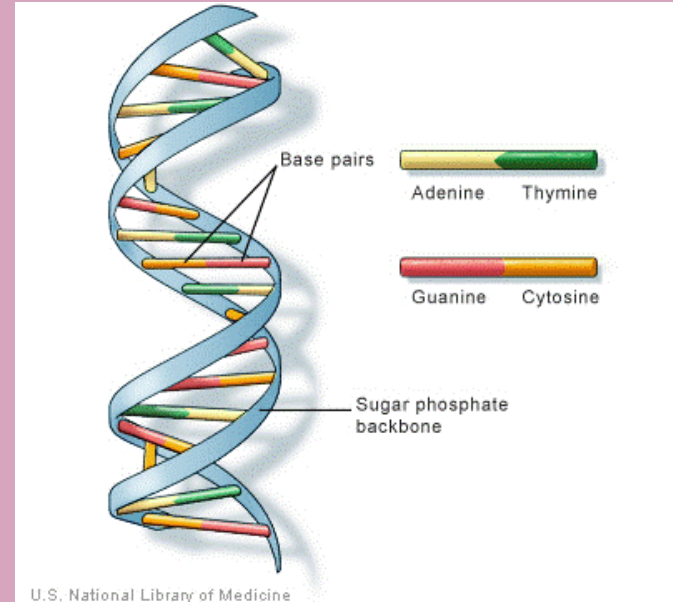
- *Alphabet* of the rule book!
 - A = Adenine
 - T = Thymine
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- Function



Nucleotides

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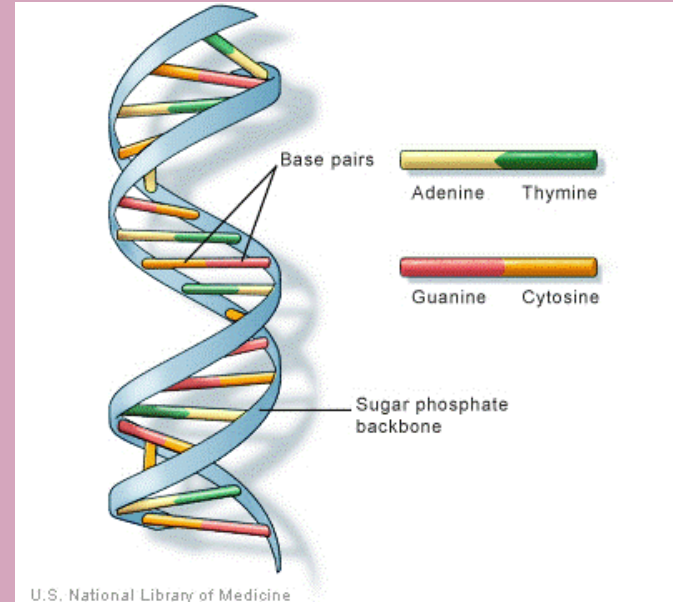
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Nucleotides

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- *Alphabet* of the rule book!
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- **Function**
 - Building blocks of DNA



Codons

- *Words* of the rule book!
 - Made up of *3 letters*
- **Function**
 - Transcribed to make amino acids (the building blocks of proteins)

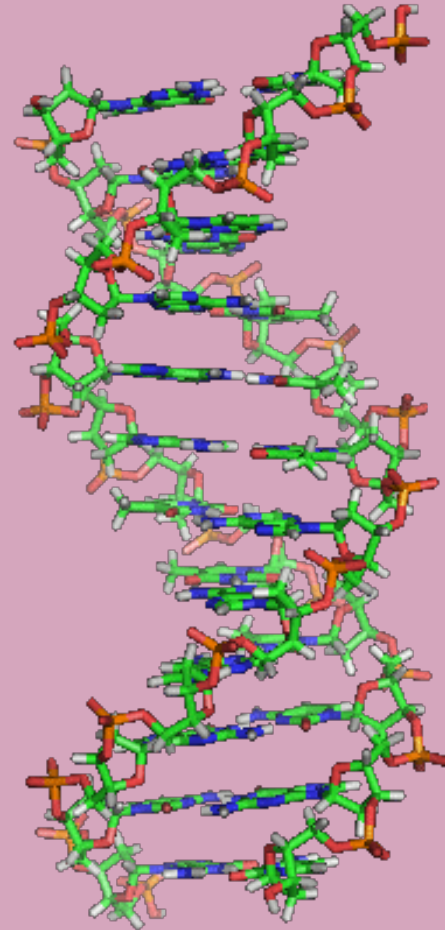
		Second letter				
		U	C	A	G	
First letter	U	UUU } Phe UUC } UUA } Leu UUG }	UCU } UCC } Ser UCA } UCG }	UAU } Tyr UAC } UAA Stop UAG Stop	UGU } Cys UGC } UGA Stop UGG Trp	U C A G
	C	CUU } CUC } Leu CUA } CUG }	CCU } CCC } Pro CCA } CCG }	CAU } His CAC } CAA } Gln CAG }	CGU } Arg CGC } CGA } CGG }	U C A G
	A	AUU } AUC } Ile AUA } AUG Mot	ACU } ACC } Thr ACA } ACG }	AAU } Asn AAC } AAA } Lys AAG }	AGU } Ser AGC } AGA } Arg AGG }	U C A G
	G	GUU } GUC } Val GUA } GUG }	GCU } GCC } Ala GCA } GCG }	GAU } Asp GAC } GAA } Glu GAG }	GGU } GGC } Gly GGA } GGG }	U C A G

https://s3us-west-2.amazonaws.com/courseimages/wp-content/uploads/sites/110/2016/05/02185922/Figure_15_01_04.jpg

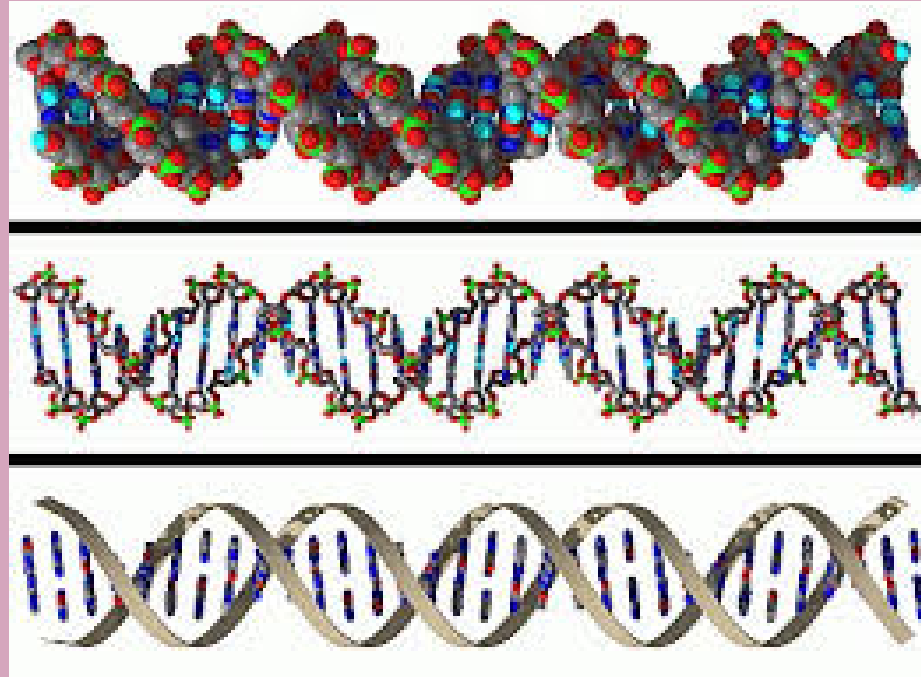


Gene

- *Sentence* of the rule book!
- **Function**
 - Encodes a protein
 - Proteins carry out functions that follow the DNA rule book



Double Helix



https://www.wired.com/wpcontent/uploads/archive/news/images/full/dna_models_f.jpg

What if we want to make
the rules?



Synthetic Biology!

