



<http://fcelter.fiu.edu/schoolyard/>

Protein Synthesis

Human Genome	Set of Encyclopedias
Individual	Individual Volume
Chromosomes	Unit
Genes	Chapter

Components of Nucleotides

- Phosphate
- Pentose Sugar (deoxyribose or ribose)
- Nitrogenous Base

Nucleic Acids=instructions for living organisms

Polymer of nucleotides
Sugar phosphate backbone

DNA vs. RNA

	DNA	RNA
	Polymer of Nucleotides	
	Sugar Phosphate Backbone	
Structure	Double Stranded	Single Stranded
Sugar	Deoxyribose	Ribose
Nitrogenous Bases		
Purines	Adenine	
	Guanine	
Pyrimidines	Cytosine	
	Thymine	Uracil

Types of RNA

mRNA	messenger RNA	--carries instructions from DNA to ribosome --“tells” tRNA which amino acid to deliver to ribosome
tRNA	transfer RNA	--carries amino acid to ribosome
rRNA	ribosomal RNA	--structural component of ribosomes

DNA Replication

GATCCGTACT
CTAGGCATGC

GATCCGTACT
DNA Polymerase breaks hydrogen bonds
CTAGGCATGC

CTAGGCATGC
Base pairing fills in other half
GATCCGTACT

CTAGGCATGC
Base pairing fills in other half
GATCCGTACT

CTAGGCATGC Two identical molecules CTAGGCATGC
GATCCGTACT are produced GATCCGTACT

TRANSCRIPTION makes mRNA

TRANSLATION

Ribosomes translate information contained within mRNA to make proteins in the process of **TRANSLATION**

Codon

- three letter code word representing an amino acid
- complementary to DNA, tRNA and rRNA
- 64 different codons representing 20 different amino acids

Anticodon

- three letter code word unique to an amino acid
- complementary to mRNA

Ribosomes are composed of rRNA and protein

DNA — *Transcription* → **mRNA** — *Translation* → **Protein**

DNA	<i>complementary to</i>	mRNA	<i>complementary to</i>	tRNA and rRNA
		(codon)		(anticodon)
T-A		U		A
C-G		C		G
G-C		G		C
A-T		A		U

Enzymes

- DNA Polymerase makes DNA
- RNA Polymerase makes RNA

Mutations=change in nucleotide (nitrogenous base) sequence

Point Mutation=change in a single nucleotide (nitrogenous base)

Substitution

Frameshift Mutation=change in nucleotide (nitrogenous base) sequence

Deletion

Insertion