Learning Target: We will explain how protein synthesis occurs.

Do Now:

A-T
C-G

1. Draw a complementary strand to the the DNA molecule below:

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

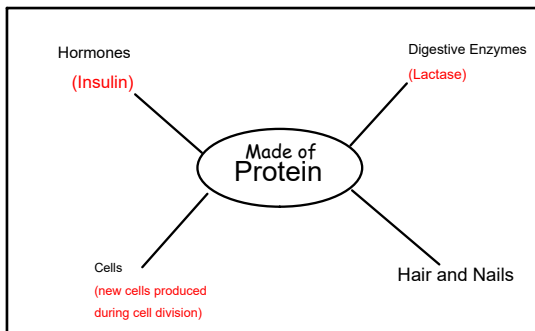
2. List 3 materials in the body that are made of protein.

hair, nails, enzymes, horm

3. Which cellular organelle is responsible for protein synthesis?

Ribosome

Page 38 set 1 1,3,9,10, 29,39



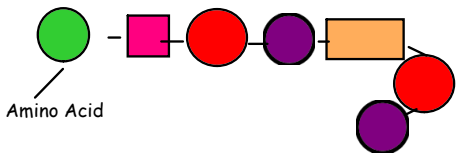
How would homeostasis be affected if proteins were not synthesized correctly?

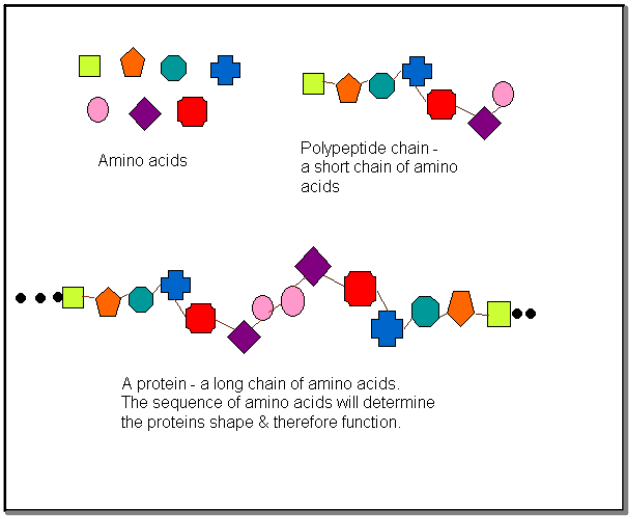
*** REVIEW

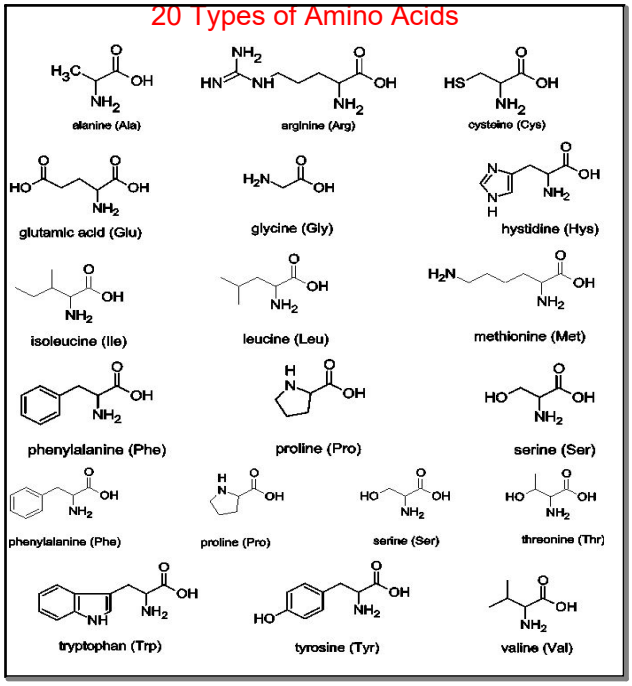
1. Our traits such as hair color and height depend on the types of Protein our DNA tells our cells to make

2. Proteins are composed of Amino Acids

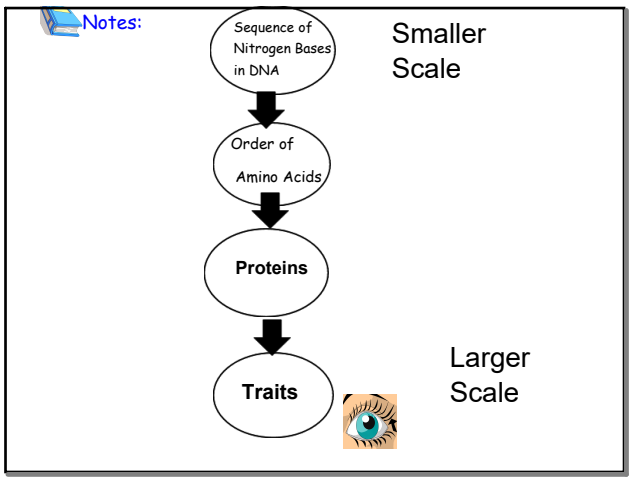
Protein Molecule



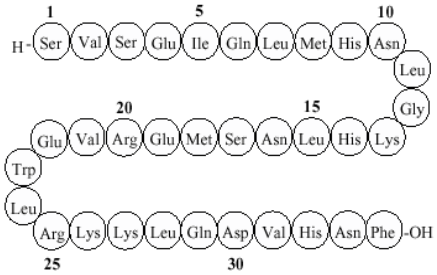




Amino Acid	3 Letter Code	1 Letter Code
Alanine	Ala	A
Arginine	Arg	R
Asparagine	Asn	N
Aspartic Acid	Asp	D
Cysteine	Cys	C
Glutamic Acid	Glu	E
Glutamine	Gln	Q
Glycine	Gly	G
Histidine	His	H
Isoleucine	Ile	I
Leucine	Leu	L
Lysine	Lys	K
Methionine	Met	M
Phenylalanine	Phe	F
Proline	Pro	P
Serine	Ser	S
Threonine	Thr	T
Tryptophan	Trp	W
Tyrosine	Tyr	Y
Valine	Val	V

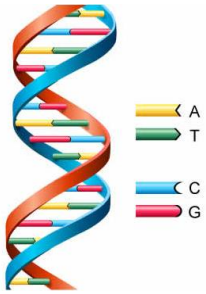


How does the body know how to put together amino acids in the correct sequence to create materials that are needed for life processes?



Notes

3. The body reads the chemical bases of a DNA molecule in groups of three at a time. codons.



AAAAGATGGGGTATGTTC

6 Codons

4. Each amino acid is represented by a different codon.

Each group of 3 letters is a codon

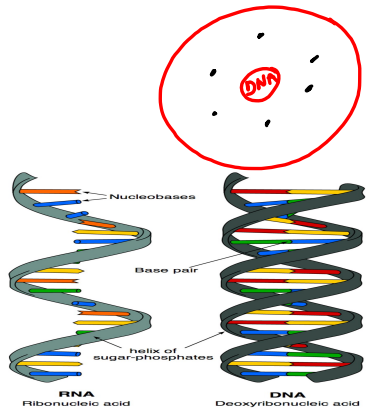
UUU, UUC: Phe; UUA, UUG: Leu	UCU, UCC, UCA, UCG: Ser	UAU, UAC: Tyr; UAA, UAG: Stop	UGU, UGC: Cys; UGA: Stop; UGG: Trp
CUU, CUC, CUA, CUG: Leu	CCU, CCC, CCA, CCG: Pro	CAU, CAC: His; CAA, CAG: Gln	CGU, CGC, CGA, CGG: Arg
AUU, AUC, AUA: Ile; AUG: Met	ACU, ACC, ACA, ACG: Thr	AAU, AAC: Asn; AAA, AAG: Lys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

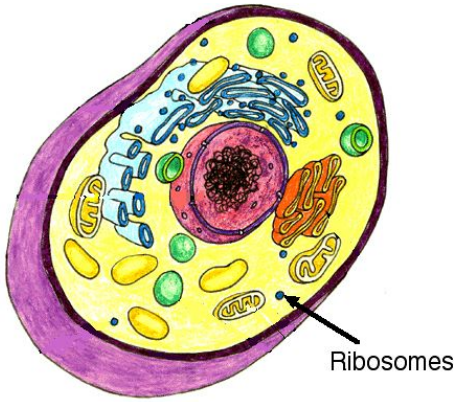
Notes : Protein Synthesis

5. Protein is synthesized at the ribosomes

6. The DNA **CANNOT** leave the nucleus to carry the genetic code to the ribosome. IT IS TOO LARGE

7. Another molecule called RNA carries the genetic code to the ribosome





1 Which two cell structures work together in the process of protein synthesis?
(1) nucleus and chloroplast
(2) ribosome and vacuole
(3) nucleus and ribosome
(4) mitochondrion and cell membrane

Notes: RNA Facts

8. RNA = ribonucleic acid

a. SINGLE stranded

b. Composed of phosphate group, sugar group (ribose) and 4 nitrogen bases.

c. Thymine is replaced with URACIL.

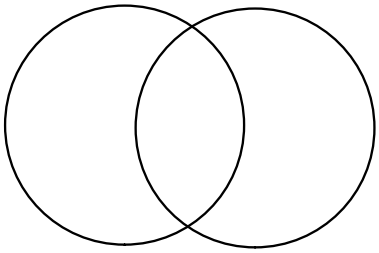
d. The bases pair as follows:

A with U

G with C

Notes

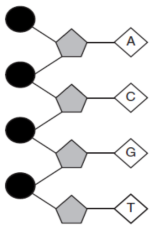
Create a Venn Diagram for DNA and RNA



Protein Synthesis Homework

Set 1 Page 38 15, 31a
Set 2 Page 46 # 22,31

Write a paragraph describing the process of protein synthesis.
Use the terms DNA, RNA, Nucleus, Ribosome and Amino Acid.



The diagram below represents a portion of a DNA molecule. The letters represent different types of
(1) sugar molecules (3) enzymes
(2) molecular bases (4) proteins

The instructions for the traits of an organism are coded in the arrangement of

(1) glucose units in carbohydrate
(2) bases in DNA in the nucleus
(3) fat molecules in the cell membrane
(4) energy-rich bonds in starch molecules