

Objective: Students can describe the structure and functions of proteins.

Do Now:

What is the relationship between DNA and proteins?

Jan 9-3:54 PM

Chargaff's DNA Data Base Composition in Various Species (%)

Species	A	T	G	C
<i>Homo sapiens</i>	31.0	31.5	19.1	18.4
<i>Drosophila melanogaster</i>	27.3	27.6	22.5	22.5
<i>Zea mays</i>	25.6	25.3	24.5	24.6
<i>Neurospora crassa</i>	23.0	23.3	27.1	26.6
<i>Escherichia coli</i>	24.6	24.3	25.5	25.6
<i>Bacillus subtilis</i>	28.4	29.0	21.0	21.6

Jan 10-10:09 AM

Part 1. True or False For each statement below, write whether it is true (T) or false (F). If it is false, you need to explain why it is incorrect.

The primary function of DNA is to store information to make proteins.

Molecules of DNA are composed of long chains of amino acids.

Every DNA nucleotide contains a sugar, a phosphate group, and a base.

DNA consists of two strands of nucleotides joined by hydrogen bonds.

Short strands of DNA are contained in chromosomes inside the nucleus of a cell.

The long strands of nucleotides are twisted into a double helix.

There are three different bases in DNA nucleotides.

Adenine bonds with Thymine and Cytosine bonds with Guanine.

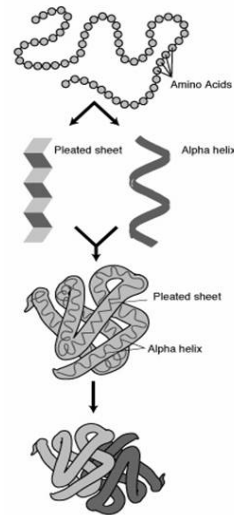
If 30% of an organism's DNA contains the base Thymine, 30% of the organism's DNA will contain the base Cytosine.

10. If a strand of DNA is read ATGCTTC, the complementary strand will read TACGAAG.

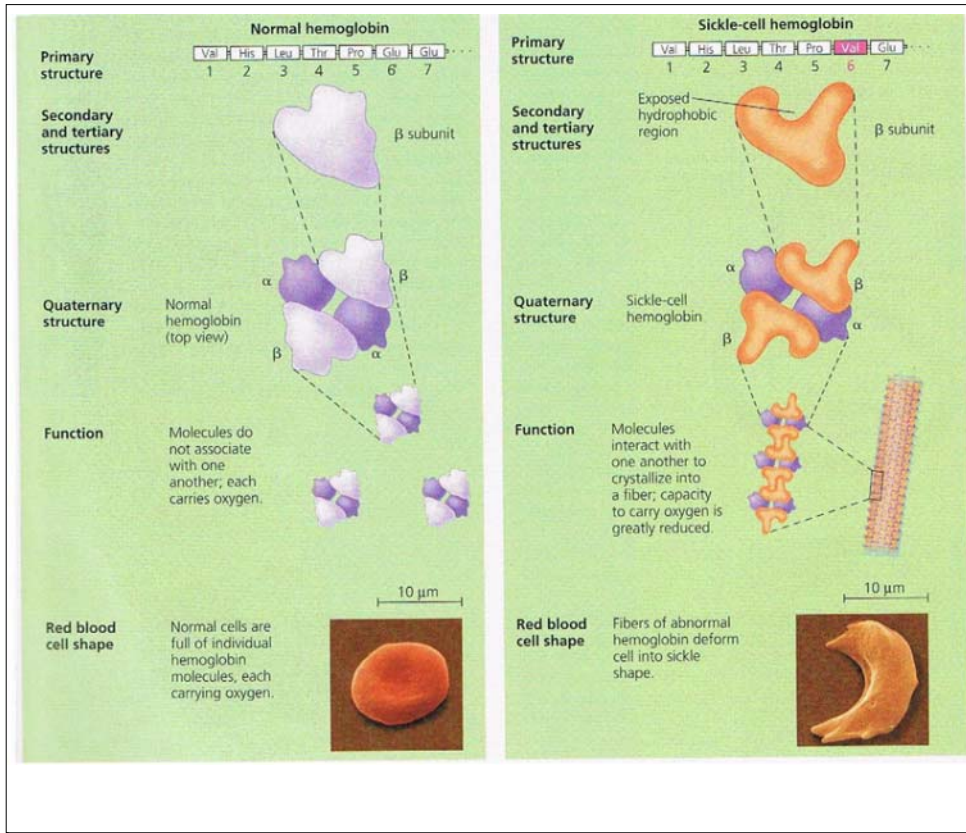
Jan 9-3:52 PM

Proteins

- building blocks of the body
- made of chains of amino acid (20)
- sequence of amino acids effects the structure of the protein
- DNA stores info for making proteins



Jan 9-3:56 PM



Jan 9-4:21 PM

On your whiteboard, you will record sentences that your group makes with your three letter words.

Your sentence must always start with "The"

Jan 9-3:57 PM

With ~~20~~²⁰ amino acids, your body produces 10,000 - 50,000 types of proteins

Each of those proteins has a different chain of amino acids which means each protein has a different _____, which means each protein has a different _____.

Jan 9-4:24 PM

Research the following questions about a protein:

- a. Where is your protein manufactured and found in the body?
- b. What does the structure of your protein allow it to do? Why?

Show your “results” on a whiteboard. Include both written descriptions and a picture or diagram.

Possible Proteins to choose from:

Type of Protein	Examples You Can Use
Enzymes	Helicase, DNA Polymerase, Ligase, Amylase
Structural/Support	Keratin, Elastin, Collagen
Gas Transport	Hemoglobin
Nutritional Storage	Ovalbumin, Casein
Immune Response	Antibodies (Immunoglobulins- Four types: IgA, IgG, IgM, and IgE)
Hormones	Estrogen, Testosterone, Insulin, Dopamine, Serotonin
Mechanical Work	Actin, Myosin
Metabolic	Thyroxine

Jan 9-3:58 PM

1. What did you discover about proteins through your research and through other whiteboards?
2. Why are proteins so vital to understand?
3. Why is it important that proteins are built correctly? What might result if something went wrong?

Jan 9-4:05 PM

Assignment:

Define the following words. Do NOT use the copied definition from your book. Just tell me what you know about them in your own words

- 1) DNA
- 2) nucleotide
- 3) base-pairing rules
- 4) Protein

There will be a quiz on the base-pairing rules next block

Jan 10-10:15 AM