Notes

AP BIOLOGY
BIOCHEMISTRY
ACTIVITY #6

NAME_____

NAME_____HOUR____

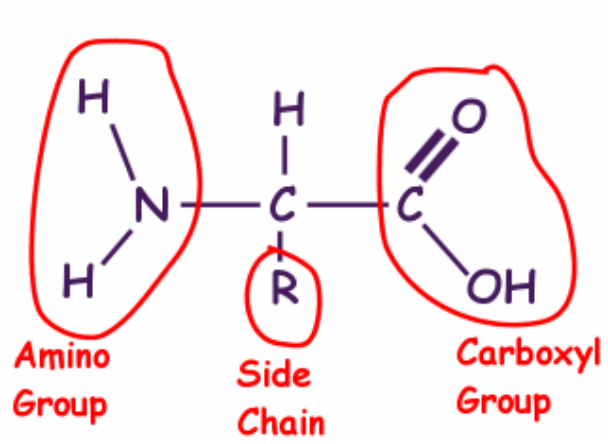
PROTEINS

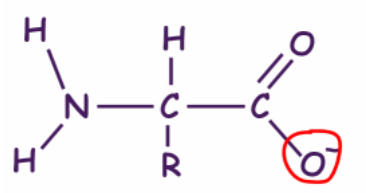
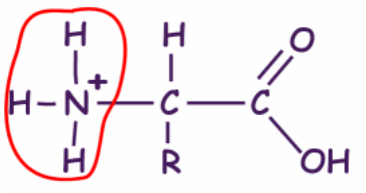
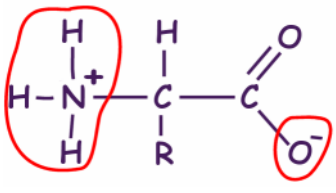
GENERAL CHARACTERISTICS AND IMPORTANCES:

- Polymers of amino acids
- Each has unique 3-D shape
- Vary in sequence of amino acids
- Major component of cell parts
- Provide support
- Storage of amino acids
- Receptor proteins; contractile proteins; antibodies; enzymes

BUILDING BLOCKS:

Amino acids
20 different
amino acids



ANION	CATION	DIPOLAR ION
		

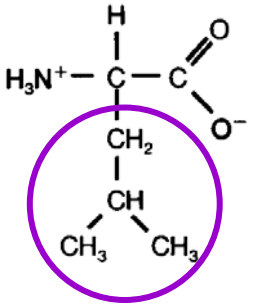
CLASSIFICATION:

Based on properties of side chain

NONPOLAR:

Hydrocarbon Chains

No oxygen

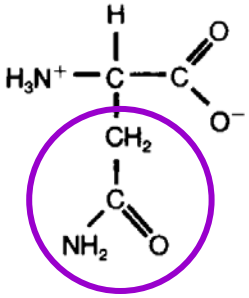


POLAR:

Oxygen present

Sometimes sulfur

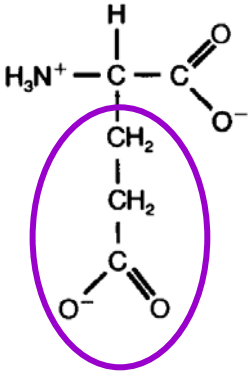
No charge



POLAR CHARGED ACIDIC:

Negative charge

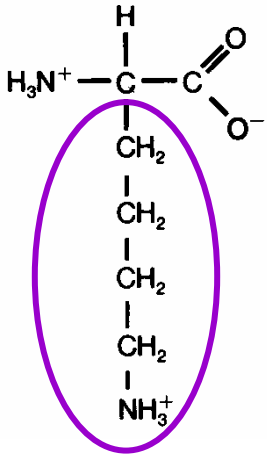
Donate H+ to solution



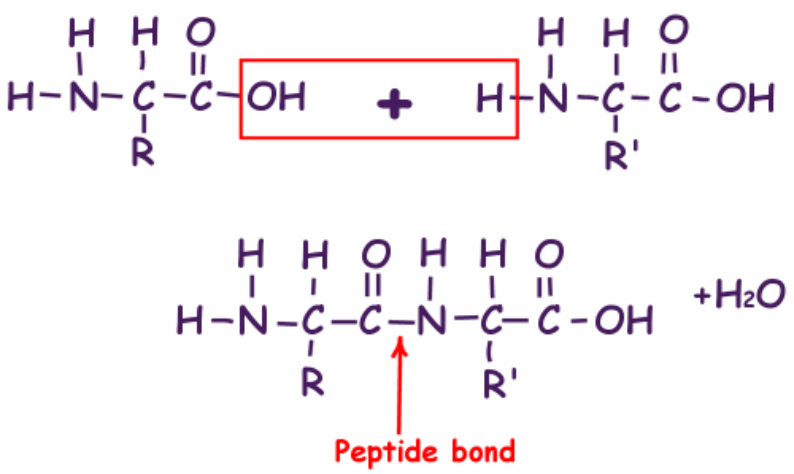
POLAR CHARGED BASIC:

Positive charge

Gain H+ from solution



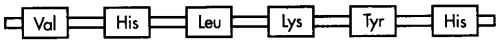
PEPTIDE BONDS:



PROTEIN CONFORMATION:

Unique 3-D shape

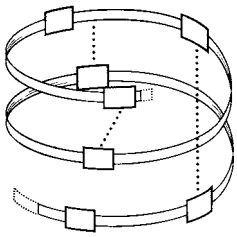
PRIMARY:



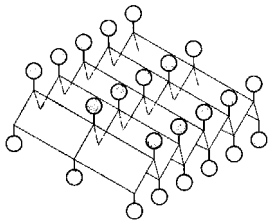
- Sequence of amino acids
- Determined by genes (sequence of bases in DNA)

SECONDARY:

α helix

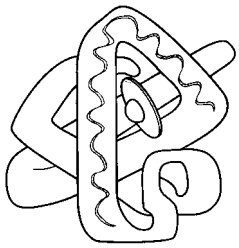


β pleated sheet



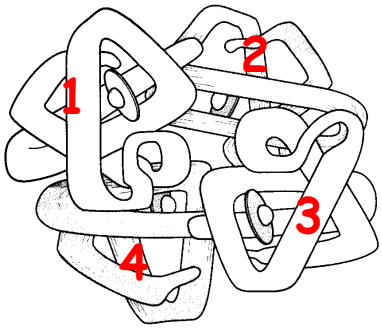
- Regular repeated folding of peptide chain
- Folding stabilized by hydrogen bonds

TERTIARY:



- Globular proteins
- Irregular contortion
- Shape stabilized by H bonds, ionic bonds, hydrophobic interactions, disulfide bridges
- Enzymes

QUATERNARY:



- Interaction of several polypeptides
- Hemoglobin
- Collagen

Hemoglobin
4 polypeptide chains

DENATURATION:

Changing protein's native conformation

Change shape = change in activity

How?

1. High temperature
2. Chemical agent (acid or base) change in pH
3. Organic solvent