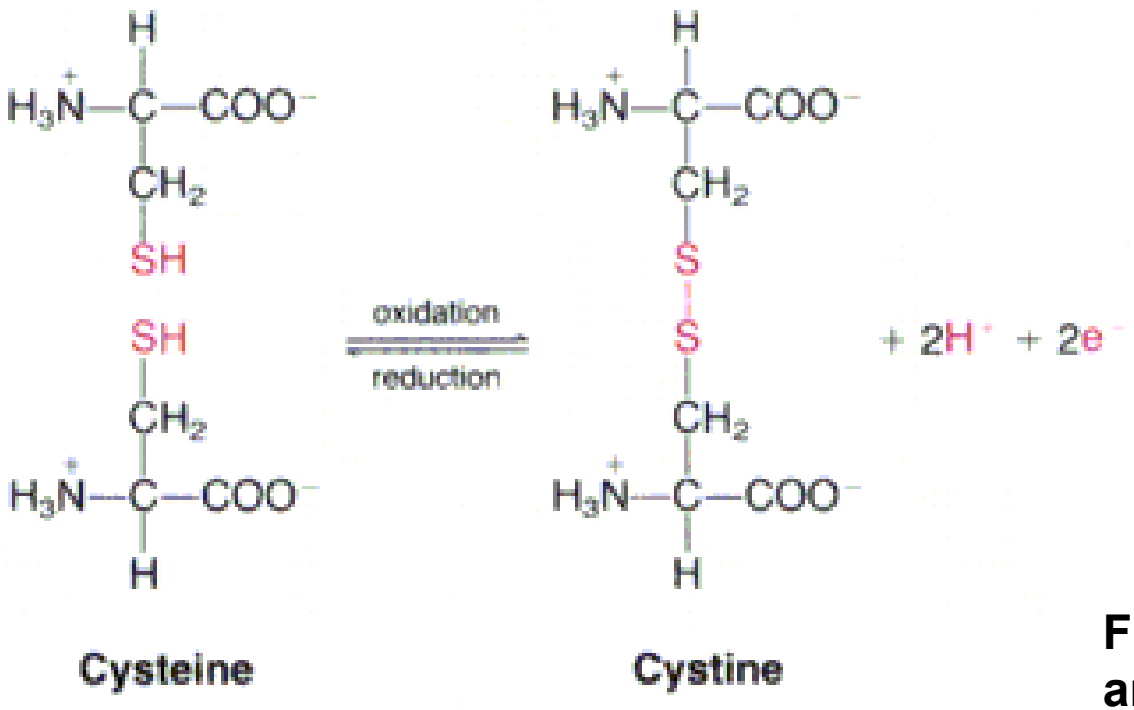
Covalent *disulphide bonds* *("bridges")* can be formed between pairs of cysteine residues ($-CH_2$-SH).

The location of these bonds is regarded as part of the primary structure - but they can have an important influence on tertiary structure.



Figs. Mathews, van Holde, and Ahern *Biochemistry* 3rd edition.

e.g. Lysozyme – structure stabilised by 4 disulphide bonds…

http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/L/Lysozyme.html

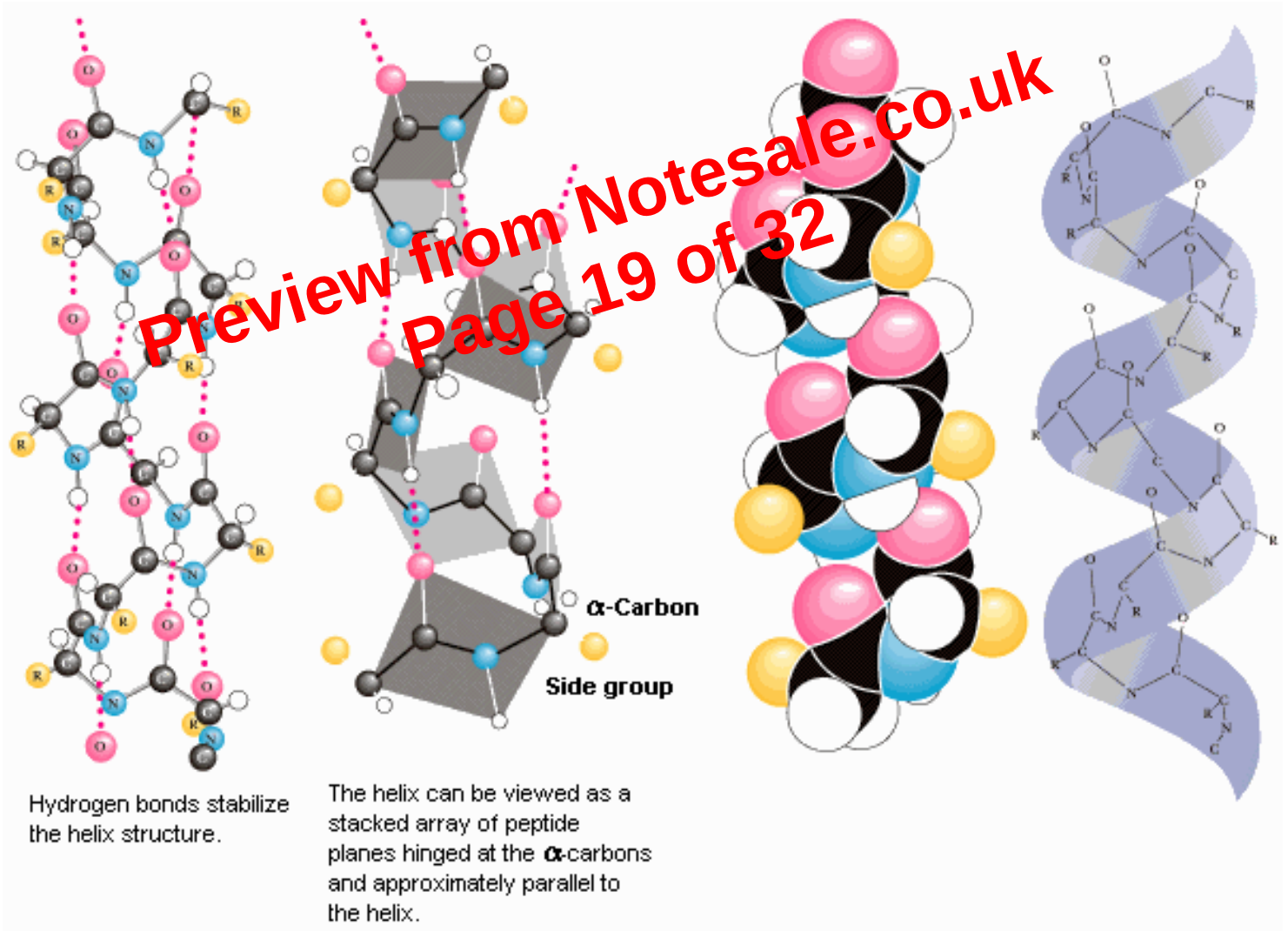
A protein's 3D structure is absolutely essential for it to carry out its biological function...

Proteins do **NOT** simply consist of a randomly coiled chain of amino acids – they usually have a very **well defined** structure.

2. Secondary structure

Associations between amino acids (*particularly hydrogen bonds between the **C=O** and **N-H** of different peptide bonds)* can lead to formation of a number of simple and stable repetitive conformations.

The best known of these are the **α-helix** and the **β-strand** (or β-sheet).



Hydrogen bonds stabilize the helix structure.

The helix can be viewed as a stacked array of peptide planes hinged at the α-carbons and approximately parallel to the helix.

From *Biochemistry* 2nd Ed. by Garrett and Grisham

3. Tertiary Structure

The folding of a protein in three dimensions is referred to as tertiary structure.