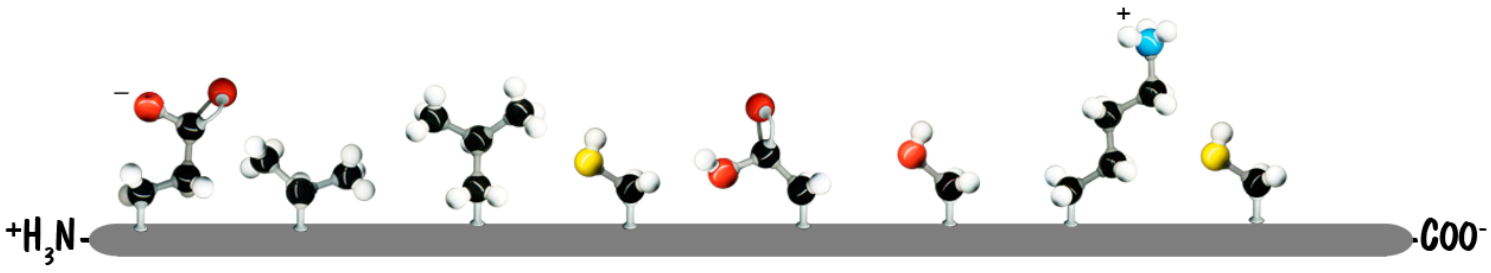
Tertiary Structure

Now that the chemical constituents of the backbone are stable in their secondary structure, its time to deal with the side chains. **TERTIARY STRUCTURE** is the overall shape of a polypeptide based on interactions between its various side chains.

Let's look at another short hypothetical polypeptide:

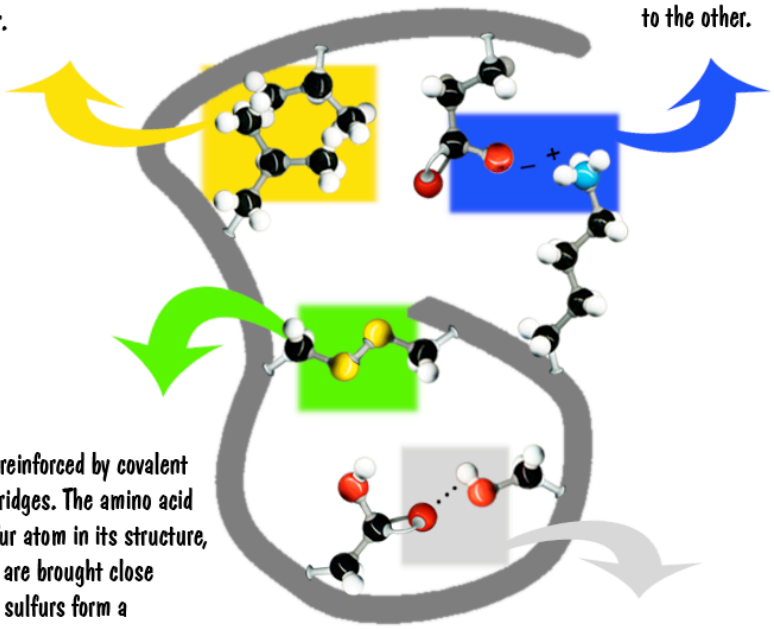


Van der Waals Interactions

Due to their hydrophobic nature, non-polar sidechains are often buried inside a protein's sturcture, close enough to other hydrophobic molecules to allow minute differences in charge to hold them together.

Ionic Bonds

An ionic bond can form between any two oppositely charged ions, even if the ions are not formed by the transfer of an electron from one to the other.



Disulfide Bridges

A protein's structure is reinforced by covalent bonds called disulfide bridges. The amino acid cysteine includes a sulfur atom in its structure, and when two cysteines are brought close together by folding, the sulfurs form a covalent bond.

Hydrogen Bonds

A Hydrogen bond forms when a hydrogen atom covalently bonded to one electronegative atom (in this case, an oxygen) is also attracted to another electronegative atom. These bonds are crucial in protein structure formation and stability.