

Protein Structure

Biology

Four levels of structure, and what holds each together.

Each level, and the bonds involved.

Level	Is	Held by
Primary	Amino acid sequence	Peptide bonds
Secondary	α -helix, β -pleated sheet	Hydrogen bonds
Tertiary	3-D folded shape	H bonds, ionic, disulfide, hydrophobic
Quaternary	Several polypeptides together	Same as tertiary

Denaturation breaks tertiary and quaternary structure without breaking peptide bonds — which is why it is usually irreversible in practice.