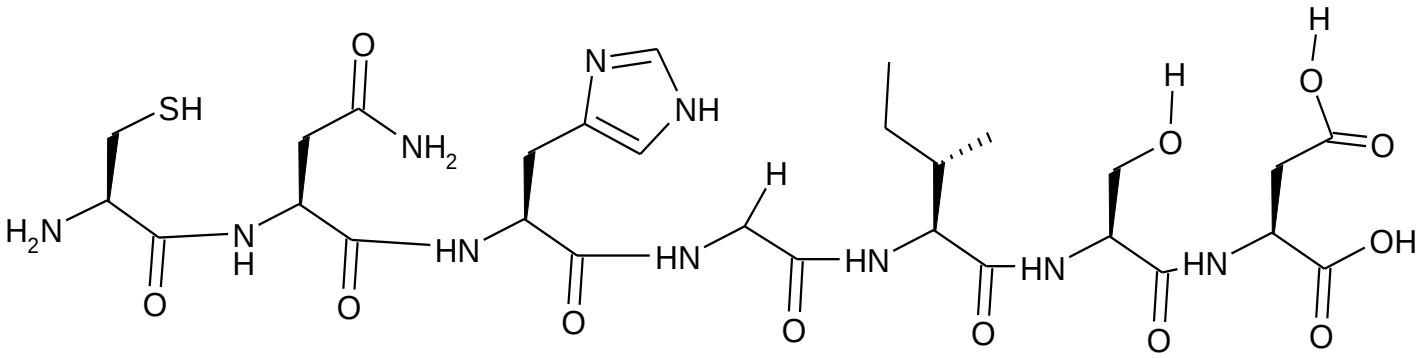
PROTEIN STRUCTURE WORKSHEET

1. Fill in the primary structure and show with arrows where the peptide bonds are.

2. Show the bonding (with dotted lines) in the secondary structure of an alpha helix.
3. Draw a parallel polypeptide using amino acid fragments that show all of the possible tertiary structure bonding
4. Describe how these tertiary structure bonds could be disrupted (denatuare this polypeptide you have made)



TERTIARY STRUCTURE INTERACTIONS

hydrophobic bonds	**between non-polar sidechains**
hydrophilic	**between polar side chains and water**
hydrogen bonds	**between polar side chains**
ionic bonds	**between an ionic acid side chain and an ionic base side chain**
disulfide bonds	**between sulfurs in two cysteine amino acid residues**

DENATURING PROCESSES (disrupts the 2^o, 3^o, or 4^o structure):

Heat	**hydrophobic, hydrogen bonding**
pH change (acid or base)	**salt bridges**
heavy metals	**salt bridges, disulfide bonds**
oxidation	**disulfide bonds**
agitation	**hydrophobic, hydrogen bonds**

PRIMARY STRUCTURE DESTRUCTION

hydrolysis	**destroys primary structure**