CONCEPT: FIBROUS AND GLOBULAR PROTEINS

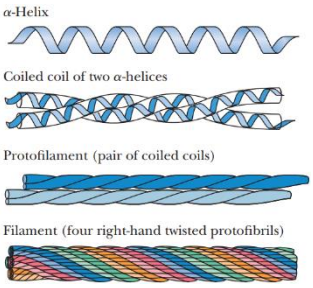
●_____ *proteins*: relatively *insoluble* proteins arranged in simple, _____, linear strands or sheets.

□ Usually only contain _____ type of secondary structure & have a _____ tertiary structure.

□ Function mostly as _____ proteins providing support, shape & external protection.

EXAMPLE: Fibrous structure of α-keratin, collagen & silk fibroin.

_____ _____ _____ _____



PRACTICE: Why is collagen insoluble?

a) The polar side chains of its residues highly interact with water.

b) Its hydrophobic residues exposed on its surface do not fold away into a core in its linear structure.

c) Its long, linear structure increases its surface area, minimizing residue contact with water.

d) The lack of multiple secondary structures indirectly correlates with its lack of hydrophobic residues.

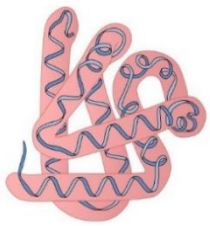
Globular Proteins

●*Globular proteins*: soluble proteins that fold into a compact spherical or _____ shape.

□ Often contain _____ tertiary structures with _____ types of secondary structure (ex. α-helices & β sheets).

□ Function mostly as _____ & regulatory proteins.

EXAMPLE: Globular protein structure.



PRACTICE: Which of the following statements concerning protein structure is true?

a) All globular proteins, including myoglobin and its 8 α-helices, have quaternary structure.

b) Disulfide bond formation in fibrous proteins is incredibly rare due to the lack of a compact fold.

c) Enzyme structures tend to have significantly more beta turns than silk fibroin or α-keratin.

d) Hemoglobin is more soluble than collagen as a result of having a lower variety of motifs.