CONCEPT: ALPHA HELIX

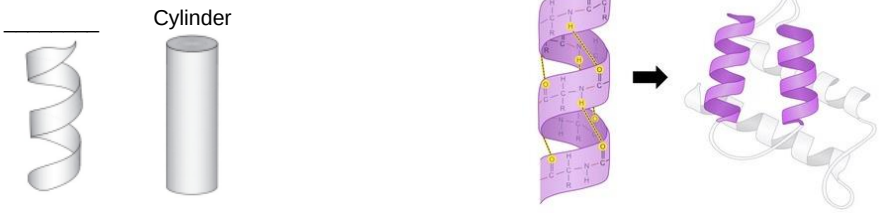
●_____ (α) *helix*: a secondary structure where the protein _____ coils & has a periodic, spiral-like conformation.

□ Stabilized by _____-bond formation in the *backbone* between *distant* amino acids on the *same* chain.

□ Backbone hydrogen bonds are nearly _____ to the axis of the alpha helix.

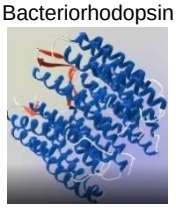
□ α-Helix backbone can be depicted as a *ribbon* or _____.

EXAMPLE: α-Helix Depictions.



PRACTICE: Which of the following is true regarding the α-helices in the protein bacteriorhodopsin?

Bacteriorhodopsin



a) Its α-helices involve multiple polypeptide chains to stabilize the coiled structures.
b) Their spiral-like structure is stabilized primarily by backbone hydrogen bonds.
c) Its α-helices are commonly depicted as cones pointing towards the c-terminal end.
d) Along with its β-sheets, its α-helices define its tertiary level of protein structure.
e) a & b

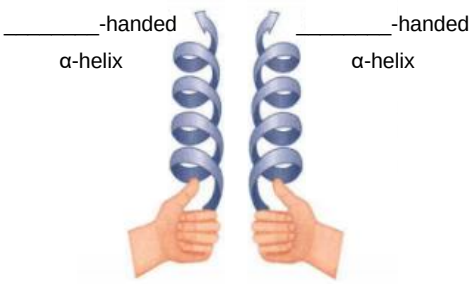
Alpha Helix Screw Sense

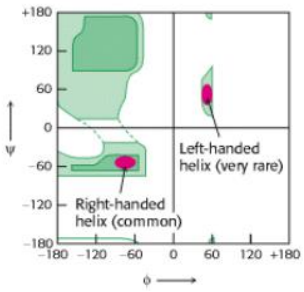
●*Screw sense*: Right-handed (clockwise) or left-handed (_____-clockwise) twist of the alpha helix spiral.

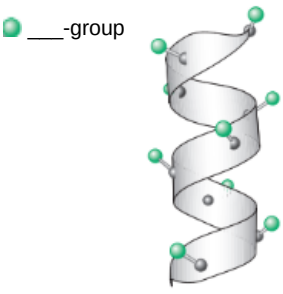
□ Right-handed α-helix is much _____ stable and common than the left-handed helix, which is rare.

●R-groups of amino acids in an α-helix point outward, away from the helix to _____ steric hindrance.

EXAMPLE: α-Helix Screw Sense.







PRACTICE: Which of the following statements about α-helices is false?

a) Alpha helices of the Ribonuclease A enzyme are stabilized by hydrogen bonding of the peptide backbone.
b) Hemoglobin proteins predominantly contain left-handed α-helices.
c) The R groups of amino acids residues in an α-helix extend radially outward (away from helix center).
d) α-helix hydrogen bonds of the enzyme citrate synthase are roughly parallel to the axis of the α-helix.