CONCEPT: POST TRANSLATIONAL MODIFICATION

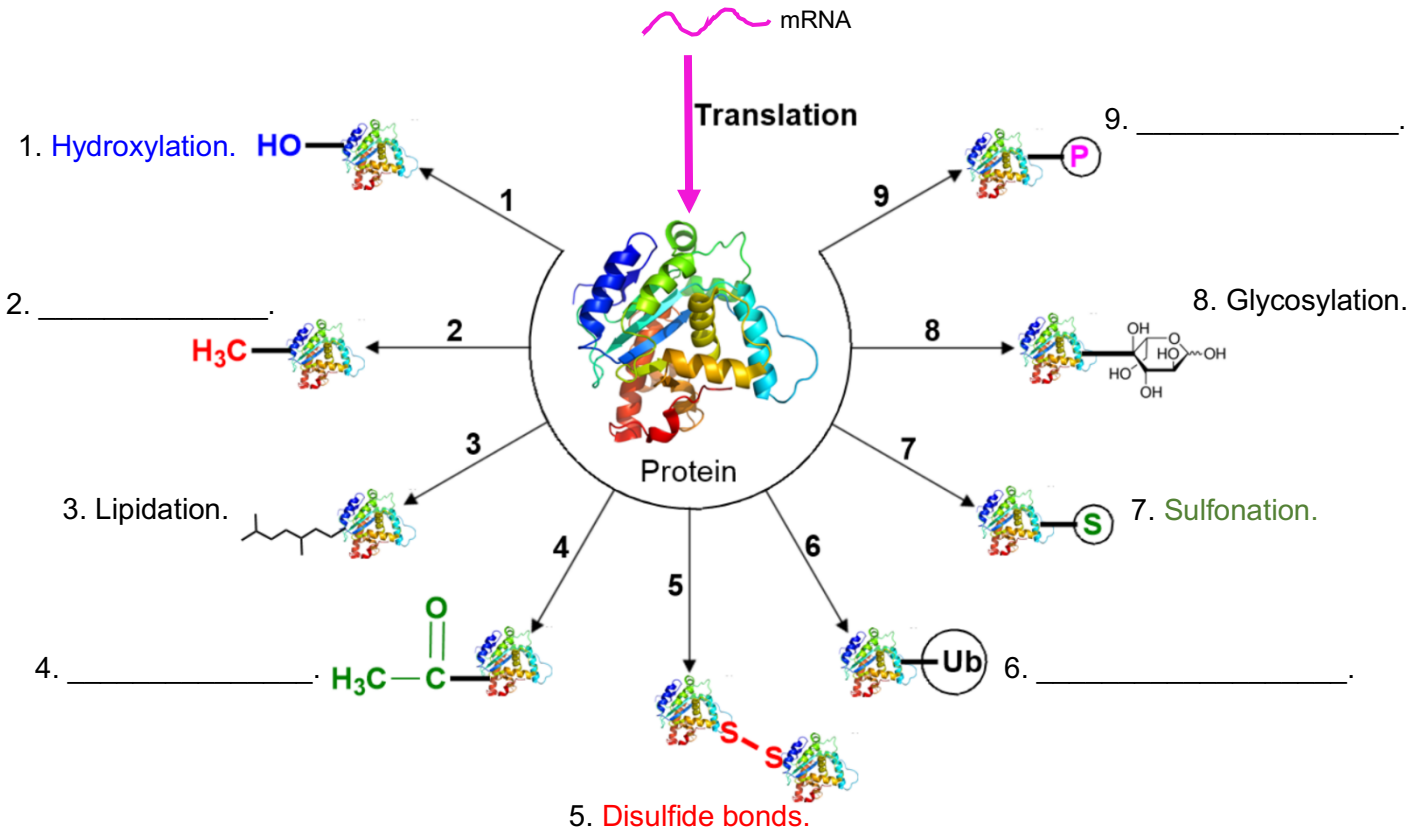
●Recall: *translation* is the cellular process of building _____ using the encoded messages of _____.

●_____-Translational Modifications: protein _____ alterations that control protein activity _____ translation.

●There are *many* types of *post-translational modifications* (PTM), but some of the more common types include:

□ Methylation □ Acetylation □ Ubiquitination □ Phosphorylation

EXAMPLE: Post-Translational Modifications.

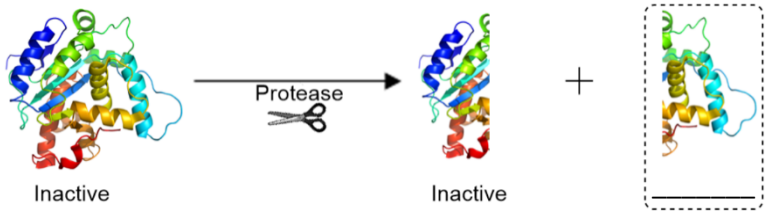


Proteolytic Cleavage

●Another type of *post-translational-modification* is _____ cleavage.

□ *Proteolytic cleavage*: process of *breaking* _____ bonds between amino acid residues of proteins.

□ Requires proteases or _____, which are *enzymes* that cleave peptide bonds.



PRACTICE: Which of the following would not be a reversible post-translational modification?

a) Phosphorylation. b) Preoteolytic processing. c) Alkylation. d) Methylation.

CONCEPT: POST TRANSLATIONAL MODIFICATION

PRACTICE: An enzyme's active site has high affinity for a polar charged substrate. How will methylation of the active site affect the reaction rate of the enzyme?

a) Affinity for the charged substrate will increase thereby increasing reaction rate.
b) Affinity will remain unchanged, and therefore will be independent of the modification.
c) Affinity for the substrate will decrease, lowing the reaction rate.

PRACTICE: Histones are proteins that regulate gene expression by binding to DNA and controlling which regions are exposed to be expressed. Histones bind to DNA at a neutral pH via their positively charged lysine residues, but acetylation of histones leads to the dissociation of the DNA-Histone complex. Covalent modification of lysine's ammonium group by acetylation results in an overall _____ charge of the histone binding region.

a) Positive. b) Neutral. c) Negative.