Acetylated lysine 174

Acetylated lysine 174 refers to a specific lysine residue, at position 174, that has undergone acetylation. Acetylation is a post-translational modification where an acetyl group (CH3CO) is added to a lysine residue in a protein. This modification is carried out by enzymes called acetyltransferases and can have significant effects on protein function, interactions, stability, and localization.

Contexts Where Acetylated Lysine 174 is Relevant: Histone Proteins:

Lysine acetylation on histones, including specific residues such as lysine 174, plays a crucial role in regulating gene expression by altering chromatin structure. Acetylation generally reduces the positive charge on lysine residues, decreasing the interaction between histones and DNA, and making the DNA more accessible for transcription factors. Non-Histone Proteins:

Many non-histone proteins, including transcription factors, enzymes, and structural proteins, can also be acetylated. Acetylation at specific lysine residues can influence their activity, interactions, and stability. For example, acetylation can affect the DNA-binding affinity of transcription factors or the catalytic activity of enzymes. Specific Proteins:

Acetylation of lysine 174 might be particularly relevant in specific proteins. For instance, in certain transcription factors or enzymes, acetylation at lysine 174 could modulate their function or interactions. To determine the exact role, the specific protein context would need to be identified. Functional Implications of Lysine Acetylation: Regulation of Protein Activity:

Acetylation can activate or inhibit the activity of enzymes and other proteins. For instance, acetylation of lysine residues in enzymes might alter their catalytic activity. Protein-Protein Interactions:

Acetylation can create or disrupt binding sites for other proteins. Some proteins have domains that specifically recognize acetylated lysines, such as bromodomains. Protein Stability:

Acetylation can affect the stability of proteins, marking them for degradation or protecting them from proteolytic pathways. Localization and Transport:

Acetylation can influence the subcellular localization of proteins, affecting their transport to different cellular compartments. If you have a specific protein or context in mind where lysine 174 acetylation is relevant, please provide more details so I can give a more tailored explanation.