

Acetylation

- Modification to histone tail (chain of amino acids)
- Addition of an acetyl group CH_3CO to lysine (K) amino acids
- Lysine positively charged
- Occurs through enzyme histone acetyl transferase (HAT)
- Reduces +ve charge of histones
- Reduces electrostatic interaction
- ACETYLATION CAUSES TRANSCRIPTIONAL ACTIVATION = EUCHROMATIN
- DEACETYLATION CAUSES TRANSCRIPTIONAL SILENCING = HETEROCHROMATIN
- Reversible process – groups can be removed by histone deacetylase (HDAC)

Methylation

- Addition of methyl group CH_3 to lysine (K) or arginine (R)
- Occurs through histone methyltransferase (HMTs)
- Can cause transcriptional activation or silencing depending on which residues are affected
- EFFECT OF METHYLATION ON CHROMATIN STRUCTURE DEPENDENT UPON WHICH AMINO ACIDS ARE METHYLATED
- Reversible process – groups can be removed by histone demethylases (HDM)

Phosphorylation

- Addition of phosphate group at serine and threonine amino acids

Ubiquitination

- Small protein at lysine amino acids

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