

**Histone Modification Table**

Histone	Modified Site	Modification Pattern	Modifying Enzymes	Proposed Function
<b>H1</b>	Ser27	Phosphorylation	unknown	transcriptional activation, chromatin decondensation
	Lys26	Methylation	Ezh2	transcriptional silencing
<b>H2A</b>	Lys 4 (S. cerevisiae)	Acetylation	Esa 1	Transcription activation
	Lys5 (mammals)	Acetylation	Tip60, p300/CBP	transcriptional activation
	Lys7 (S. cerevisiae)	Acetylation	Hat1	unknown
	Lys7 (S. cerevisiae)	Acetylation	Esa1	transcriptional activation
	Ser 1	Phosphorylation	unknown, MSK1	mitosis, chromatin assembly, transcriptional repression
	Thr119 (D. melanogaster)	Phosphorylation	NHK1	mitosis
	Ser122 (S. cerevisiae)	Phosphorylation	unknown	DNA repair
	Ser129 (S. cerevisiae)	Phosphorylation	Mec1, Tel1	DNA repair
	Ser139 (mammalian H2AX)	Phosphorylation	ATR, ATM, DNA-PK	DNA repair
	Lys 119 (Mammals)	Ubiquitylation	Ring2	spermatogenesis
	Lys126 (S. cerevisiae)	Sumoylation	Ubc9	transcriptional repression
	Lys9	Biotinylation	biotinidase	unknown
	Lys13	Biotinylation	biotinidase	unknown
	<b>H2B</b>	Lys5	Acetylation	p300, ATF2
Lys11 (S. cerevisiae)		Acetylation	Gcn5	transcriptional activation
Lys12 (mammals)		Acetylation	p300/CBP, ATF2	transcriptional activation
Lys15 (mammals)		Acetylation	p300/CBP, ATF2	transcriptional activation
Lys16 (S. cerevisiae)		Acetylation	Gcn5, Esa1	transcriptional activation
Lys20		Acetylation	p300	transcriptional activation
Ser10 (S. cerevisiae)		Phosphorylation	Ste20	apoptosis
Ser14 (vertebrates)		Phosphorylation	Mst1, unknown	apoptosis, DNA repair
Ser33 (D. melanogaster)		Phosphorylation	TAF1	transcriptional activation
Lys120 (mammals)		Ubiquitylation	UbcH6	meiosis
Lys123 (S. cerevisiae)		Ubiquitylation	Rad6	transcriptional activation, euchromatin
Lys6 or Lys7 (S. cerevisiae)		Sumoylation	Ubc9	transcriptional repression
<b>H3</b>	Lys4 (S. cerevisiae)	Acetylation	Esa1, Hpa2	transcriptional activation
	Lys9	Acetylation	Gcn5, SRC-1, unknown	transcriptional activation, histone deposition
	Lys14	Acetylation	unknown, Gcn5, PCAF, Esa1, Tip60, SRC-1, E1p3, Hpa2, hTFIIIC90, TAF1, Sas2, Sas3, p300	histone deposition, transcriptional activation, DNA repair, RNA polymerase II & III transcription, euchromatin
	Lys18	Acetylation	Gcn5, p300/CBP	transcriptional activation, DNA repair and replication
	Lys23	Acetylation	unknown, Gcn5, SAs3, p300/CBP	histone deposition, transcriptional activation, DNA repair
	Lys27	Acetylation	Gcn5	transcriptional activation
	Lys56 (S. cerevisiae)	Acetylation	Spt10	transcriptional activation, DNA repair
	Lys4	Methylation	Set1 (S. cerevisiae), Set7/9 (vertebrates), MLL, ALL-1,	permissive euchromatin (di-Me), transcriptional activation
	Arg8	Methylation	PRMT5	transcriptional repression
	Lys9	Methylation	Suv39h,Clr4, G9a, SETDB1, Dim-5 (N. crassa), Kryptonite (A. thaliana), Ash1 (D. melanogaster)	transcriptional silencing (tri-Me), transcriptional repression, genomic imprinting, DNA methylation (tri-Me), transcriptional activation
	Arg17	Methylation	CARM1	transcriptional activation
	Lys27	Methylation	Ezh2, G9a	transcriptional silencing, X inactivation (tri-Me)
	Lys36	Methylation	Set2	transcriptional activation (elongation)
	Lys79	Methylation	Dot1	euchromatin, transcriptional activation (elongation), checkpoint response
	Thr3	Phosphorylation	Haspin/Gsg2	mitosis
	Ser10	Phosphorylation	Aurora-B kinase, MSK1, MSK2, IKK- $\alpha$ , Snf1	mitosis, meiosis, immediate-early gene activation, transcriptional activation
	Thr11 (mammals)	Phosphorylation	Dlk/Zip	mitosis
	Ser28 (mammals)	Phosphorylation	Aurora-B kinase, MSK1, MSK2	mitosis, immediate-early activation
	Lys4	Biotinylation	biotinidase	gene expression
	Lys9	Biotinylation	biotinidase	gene expression
Lys18	Biotinylation	biotinidase	gene expression	
<b>H4</b>	Lys5	Acetylation	Hat1, Esa1, Tip60, ATF2, Hpa2, p300	histone deposition, transcriptional activation, DNA repair
	Lys8	Acetylation	Gcn5, PCAF, Esa1, Tip60, ATF2, E1p3, p300	transcriptional activation, DNA repair
	Lys12	Acetylation	Hat1, Esa1, Tip60, Hpa2, p300	histone deposition, telomeric silencing, transcriptional activation, DNA repair
	Lys16	Acetylation	Gcn5, MOF (D. melanogaster), Esa1, Tip60, ATF2, Sas2	transcriptional activation, DNA repair, euchromatin
	Lys91 (S. cerevisiae)	Acetylation	Hat1/Hat2	chromatin assembly
	Arg3	Methylation	PRMT1	transcriptional activation
	Arg3	Methylation	PRMT5	transcriptional activation
	Lys20	Methylation	PR-Set7, Suv4-20h, Ash1 (D. melanogaster), Set9 (S. pombe)	transcriptional silencing (mono-Me), heterochromatin (tri-Me), transcriptional activation, checkpoint response
	Lys59	Methylation	unknown	transcriptional silencing
	Ser1	Phosphorylation	unknown, CK2	mitosis, chromatin assembly, DNA repair
	N-terminal tail (S. cerevisiae)	Ubiquitylation	Ubc9	transcriptional repression
	Lys12	Biotinylation	biotinidase	DNA damage response