

Supplemental Information T1: The number of peptides identified in BSA with either Glu-methylation or Glu-ethylation induced by various destaining/washing solutions during in-gel digestion.

Destaining Solution	Frequency of E-methylation	Frequency of E-ethylation
EtOH/H ₂ O (50%/50%)	0	1
HAc/H ₂ O/EtOH (10%/40%/50%)	0	2
MeOH/H ₂ O (50%/50%)	0	0
HAc/H ₂ O/MeOH (10%/40%/50%)	4 ¹⁸	0

¹⁸Jung, S. Y.; Li, Y.; Wang, Y.; Chen, Y.; Zhao, Y.; Qin, J., Complications in the assignment of 14 and 28 da mass shift detected by mass spectrometry as in vivo methylation from endogenous proteins. *Anal Chem* **2008**, 80, (5), 1721-9.

Supplemental Information T2: The number of peptides identified with any one of four types of modification (Lys -19 Da from histone H4, Cys +108 Da, Cys +76 Da, Cys + 71 Da from BSA) following in-gel or in-solution tryptic digestion.

Type of modifications		Frequency of modifications, in-gel digestion	Frequency of modifications, in-solution digestion
Modified residue	Mass shift (Δ Da)		
Lys	- 19	8	0
Cys	+ 108	6	0
Cys	+ 76 (mercaptoethanol)	15	3
Cys	+ 71 (acrylamide)	18	0