

Table S1. Different types of Oxi-Cys proteomics approaches.

Method	Type of Oxi-Cys PTMs	Labelling Chemicals/Tags	Approach	MS/MS ⁽ⁿ⁾ quantification	Samples	Number of Oxi-Cys sites (peptides/proteins)	References
SICyLIA	Global reversible Cys oxidation	Light (¹² C ₂ H ₄ INO) and heavy (¹³ C ₂ D ₂ H ₂ INO) iodoacetamide NEM to block oxidised Cys	Light and heavy stable isotopic (# 4.0 Da)	MS ¹	Mouse cells and kidneys	Mouse cells: 9479 unique Cys-containing Peptides (3563 proteins) Mouse kidney tissues : 4415 Cys-containing Peptides (2168 proteins)	(van der Reest et al., 2018)
DiaAlk	S-sulfinylation S-sulfenylation	DiaAlk-triazohexanoic acid, C ₁₅ H ₂₅ N ₅ O ₇ Light and heavy isotopic UV Cleavable Biotin-Azide C ₃₈ H ₅₁ N ₇ O ₉ S BTD-triazohexanoic acid, C ₁₉ H ₂₂ N ₄ O ₅ S Azide-alkyne cycloaddition	Light and heavy isotopic tags (# 6.0201 Da)	MS ¹	Hela and A549 cell line	387 probe-tagged S-sulfinylated sites/ 296 proteins 1,173 and 1,098 S-sulfenylation sites in A549 and HeLa cells	(Akter et al., 2018)

IodoTMT	Global and selective Oxi-Cys	IodoTMT reagents	126, 127, 128, 129, 130 and 131 <i>m/z</i>	MS ²	Microglial cells		(Qu et al., 2014)
CysTMTRAQ	Global and selective Oxi-Cys and global proteins' abundance	CysTMT tags and iTRAQ tags	Different in isobaric tags CysTMT: 126, 127, 128, 129, 130 and 131 <i>m/z</i> TMT: 114, 115, 116, 117, 118, 119 and 121 <i>m/z</i>	MS ²	<i>Escherichia coli</i>	912 cysteine-containing peptides	(Parker et al., 2015)
isoTOP-ABPP	proteome-wide surveys of cysteine reactivity	Light and heavy alkynylated IA-probes Idoactamide conating alkene group TEV-biotin tags	Light and heavy isotopic tags (# 6.0201 Da)	MS ¹	Yeast, mouse, and human cancer cell lines	1097 Cys-containing peptides detected in human cell lines 168 Cys-peptides in mouse heart	(Weerapana et al., 2007; van der Reest et al., 2018)
QTRP	Measuring reversible Cys	IPM, light and heavy (13C6) Az-UV-biotin reagents			Human cell lines	6566 cysteines on 3557 proteins	(van der Reest et al., 2018)
OxycscPILOT	S-nitrosylation and S-glutathionylation	light for total Cys, or heavy SON PTM) demethylation CH ₂ O and ¹³ CD ₂ O	TMT	MS2/MS3	Mouse with AD vs Wt		(Dyer et al., 2017)

		Coupled with TMT or iTRAQ					
OxiMRM	All forms of Cys oxidation	Ligh and heavy NEM (stable isotope-labeled NEM)	LFQ (MRM) # mass 5.0314 Da	MS ² , MRM	Human breast cancer	Target proteins (protein p53 and protein tyrosine phosphatase-1B (PTP1B))	(Held et al., 2010)
UPLC-pSRM	All form of Cys oxidation, especially for irreversibly oxidised Cys			MS ¹ , pSRM	Jurkat cell lines	61 cysteine (sulfonic and sulfinic acid) oxidised peptides identified from 43 proteins	(Sherrod et al., 2012)
Cys-DIA	Global of all Cys	Enrich Cys-containing peptides by Thiopropyl Sepharose™ 6B beads	LFQ	MS1	HeLa and cancer cells	47,657 unique Cys-peptides, covering 8,698 proteins	(Tahir et al., 2020)

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