

**P003** PDSM, a motif for phosphorylation dependent SUMO modification.

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SUMO (small ubiquitin-like modifier) modification regulates many cellular processes, including transcription. Although sumoylation often occurs on specific lysines within the consensus tetrapeptide  $\psi$ KxE, other modifications, such as phosphorylation, may regulate the sumoylation of a substrate. We have discovered PDSM (phosphorylation-dependent sumoylation motif), composed of a SUMO consensus site and an adjacent proline-directed phosphorylation site (PsiKxExxSP). The highly conserved motif regulates phosphorylation-dependent sumoylation of multiple substrates, such as heat shock factors (HSFs), GATA-1, and myocyte enhancer factor 2. In fact, the majority of the PDSM-containing proteins are transcriptional regulators. Within the HSF family, PDSM is conserved between two functionally distinct members, HSF1 and HSF4b, whose transactivation capacities are repressed through the phosphorylation-dependent sumoylation. Other, PDSM like, extended sumoylation motifs are now emerging from other labs as well. Determinants beyond the consensus tetrapeptide provide a valuable tool in predicting new SUMO substrates.