MATERIAL DATA SHEET

Recombinant Human SUMO1 Mutant K16R
Cat. # ULM-712

Human Small Ubiquitin-like Modifier 1 (SUMO1), also known as Sentrin, UBL1, and SMT3C, is synthesized as a 101 amino acid (aa) propeptide with a predicted molecular weight of 11.5 kDa. Human SUMO1 is the most unique of the four identified SUMO proteins and shares only 44%, 47%, and 41% aa sequence identity with SUMO2, SUMO3, and SUMO4, respectively. In contrast, human SUMO1 shares 100% aa sequence identity with the mouse ortholog. SUMOs are a family of small, related proteins that can be enzymatically attached to a target protein by a post-translational modification process termed SUMOylation (1-3). All SUMO proteins share a conserved Ubiquitin domain and a C-terminal diglycine cleavage/attachment site. Following cleavage of a four aa C-terminal prosegment, the C-terminal glycine residue of SUMO1 is enzymatically attached to a lysine residue on a target protein. In humans, SUMO1 is conjugated to a variety of molecules in the presence of the SAE1/UBA2 SUMO-activating (E1) enzyme and the UBE2I/Ubc9 SUMO-conjugating (E2) enzyme (4,5). In yeast, the SUMO-activating (E1) enzyme is Aos1/Uba2p (6). SUMOylation can occur without the requirement of a specific SUMO ligase (E3), where SUMO1 is transferred directly from UBE2I/Ubc9 to specific substrates. In Alzheimer's disease models SUMO1 has been shown to influence the generation of Amyloid-beta peptide by promoting the accumulation of BACE-1 (7). Covalent modification of Phosphatase and Tensin Homolog Deleted on Chromosome (PTEN) by SUMO1 is thought to regulate tumorigenesis by retaining PTEN at the plasma membrane, an effect that suppresses PI 3-Kinase/Akt-dependent tumor growth (8).

Mutation of lysine 16 to arginine in SUMO-1 is useful for the analysis of poly-SUMO-1 chain formation. Human SUMO-1 does not contain the exact ψKXE motif consensus sequence found in SUMO-2 and SUMO-3 proteins, but K16 is the putative site for chain formation. SUMO-1 has been shown to form chains in vitro, but the function of SUMO chains has not yet been fully elucidated.

Product Information	
Quantity:	250 µg
Source:	*E. coli*-derived Accession # NM_003352
Stock:	Supplied as a solution in HEPES, NaCl and DTT.
Purity:	>95%, by SDS-PAGE under reducing conditions and visualized by Colloidal Coomassie® Blue stain.

Use & Storage

Use: SUMO1 chains do not readily form *in vitro* . However, the role of SUMO1 in poly-SUMO chain formation is an area of intense research. Utilizing Recombinant Human SUMO1 Mutant K16R will ensure that K16-linked chains will not be formed. Reaction conditions will need to be optimized for each specific application. We recommend an initial Recombinant Human SUMO1 Mutant K16R concentration of 10-50 µM.

Storage: **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**

- 12 months from date of receipt, -70 °C as supplied.
- 3 months, -70 °C under sterile conditions after opening.

Literature

References:

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5. Tatham, M.H. *et al*. (2001) J. Biol. Chem. **276**:35368.
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