

SUMO-1 (FL-101): sc-4273

BACKGROUND

The small ubiquitin-related modifier (SUMO) proteins, which include SUMO-1, SUMO-2 and SUMO-3, belong to the ubiquitin-like protein family. Like ubiquitin, the SUMO proteins are synthesized as precursor proteins that undergo processing before conjugation to target proteins. Also, both utilize the E1, E2, and E3 cascade enzymes for conjugation. However, SUMO and ubiquitin differ with respect to targeting. Ubiquitination predominantly targets proteins for degradation, whereas sumoylation targets proteins to a variety of cellular processing, including nuclear transport, transcriptional regulation, apoptosis and protein stability. The unconjugated SUMO-1, SUMO-2 and SUMO-3 proteins localize to the nuclear membrane, nuclear bodies and cytoplasm, respectively. SUMO-1 utilizes UBC9 for conjugation to several target proteins, which include I κ B α , MDM2, p53, PML and Ran GAP1. SUMO-2 and SUMO-3 contribute to a greater percentage of protein modification than does SUMO-1, and unlike SUMO-1, they can form polymeric chains. In addition, SUMO-3 regulates β -Amyloid generation and may be critical in the onset or progression of Alzheimer's disease.

REFERENCES

- Duprez, E., Saurin, A.J., Desterro, J.M., Lallemand-Breitenbach, V., Howe, K., Boddy, M.N., Solomon, E., de The, H., Hay, R.T. and Freemont, P.S. 1999. SUMO-1 modification of the acute promyelocytic leukaemia protein PML: implications for nuclear localisation. *J. Cell Sci.* 112: 381-393.
- Saitoh, H. and Hincey, J. 2000. Functional heterogeneity of small ubiquitin-related protein modifiers SUMO-1 versus SUMO-2/3. *J. Biol. Chem.* 275: 6252-6258.
- Tatham, M.H., Jaffray, E., Vaughan, O.A., Desterro, J.M., Botting, C.H., Naismith, J.H. and Hay, R.T. 2001. Polymeric chains of SUMO-2 and SUMO-3 are conjugated to protein substrates by SAE1/SAE2 and UBC9. *J. Biol. Chem.* 276: 35368-35374.
- Kim, K.I., Baek, S.H. and Chung, C.H. 2002. Versatile protein tag, SUMO: its enzymology and biological function. *J. Cell. Physiol.* 191: 257-268.
- Su, H. and Li, S. 2002. Molecular features of human ubiquitin-like SUMO genes and their encoded proteins. *Gene* 296: 65.
- Spengler, M.L., Kurapatwinski, K., Black, A.R. and Azizkhan-Clifford, J. 2002. SUMO-1 modification of human cytomegalo-virus IE1/IE72. *J. Virol.* 76: 2990-2996.
- Hayashi, T., Seki, M., Maeda, D., Wang, W., Kawabe, Y., Seki, T., Saitoh, H., Fukagawa, T., Yagi, H. and Enomoto, T. 2002. UBC9 is essential for viability of higher eukaryotic cells. *Exp. Cell Res.* 280: 212-221.
- Maeda, A., Lee, B.H., Yoshimatsu, K., Saijo, M., Kurane, I., Arikawa, J. and Morikawa, S. 2003. The intracellular association of the nucleocapsid protein (NP) of hantaan virus (HTNV) with small ubiquitin-like modifier-1 (SUMO-1) conjugating enzyme 9 (UBC9). *Virology* 305: 288-297.
- Li, Y., Wang, H., Wang, S., Quon, D., Liu, Y.W. and Cordell, B. 2003. Positive and negative regulation of APP amyloidogenesis by sumoylation. *Proc. Natl. Acad. Sci. USA* 100: 259-264.

CHROMOSOMAL LOCATION

Genetic locus: SUMO1 (human) mapping to 2q33.1; Sumo1 (mouse) mapping to 1 C1.3.

SOURCE

SUMO-1 (FL-101) is produced in *E. coli* as 38 kDa tagged fusion protein corresponding to amino acids 1-101 of SUMO-1 of human origin.

PRODUCT

SUMO-1 (FL-101) is purified from bacterial lysates (>98%); supplied as 50 μ g purified protein.

Available in SDS-PAGE loading buffer, sc-4273 WB, 10 μ g protein in 0.1 ml.

APPLICATIONS

SUMO-1 (FL-101) is suitable as a Western blotting control for sc-31851, sc-31852, sc-5308, sc-6375, sc-6376, sc-9060 and sc-130275.

STORAGE

Store at -20° C. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.