abcam

Product datasheet

Recombinant human Sumo 1 protein ab3801

2 Images

Overview

Product name	Recombinant human Sumo 1 protein
Protein length	Full length protein

Description

Nature	Recombinant
Source	Escherichia coli
Amino Acid Sequence	
Species	Human
Molecular weight	11 kDa

Specifications

Our Abpromise guarantee covers the use of **ab3801** in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Biological activity	The final fraction of enzyme contains a single polypeptide band of 11 kDa.
Applications	Functional Studies
Form	Liquid
Additional notes	This product can be used as part of an assay for sumoylation activity. Human Aos 1 + Uba 2 (ab3804), Ubc 9 (ab3803) and Sumo 1 (ab3801) can be used to promote in vitro sumoylation of a sumoylation marker (human Topoisomerase I protein fragment) (ab3828). The reaction products can be detected using our Sumo 1 (ab3819 and ab3824) and Topoisomerase I (ab3825) antibodies. Sumoylation assays are carried out in a final volume of 20µl in reaction conditions (20 mM Hepes pH 7.5, 5mM MgCl2, 2mM ATP). Sumoylation Protocol: 1. Prepare a suitable purified substrate protein. (For the control, use 2µl Topoisomerase I marker for each reaction). 2. In each reaction, add 4µl E2 to substrate first, then 2µl Sumo 1, 2µl 10x reaction buffer, 2µl E1. Finally, add H2O to bring up to 20µl. We would recommend adding fresh 2mM ATP to be sure that sufficient energy is supplied. 3. The best reaction concentration of proteins is as following: Aos 1 + Uba 2: 7.5µg/ml. Ubc 9: 50µg/ml. SUMO 1: 50µg/ml. For the control assay we recommend running the assay at 37ºC for 30-60 minutes. 4. Detect the reaction products by Western blot using a suitable antibody. For the control reaction use 1/1000 dilution of the supplied Topoisomerase I antibody. Four sumoylated bands should be seen on the gel for the control reaction. This assay has been shown to work with crude extracts. Be aware that Uba 2 contains

his-rich regions which might cross-react with antibodies against the 6x-His epitope tag. During western analysis with anti-6x-His antibodies, Uba 2 at 80 kDa might be shown.

The final fraction of enzyme contains a single polypeptide band of 11 kDa.

Preparation and Storage

Stability and Storage

Shipped at 4°C. Store at +4°C short term (1-2 weeks). Upon delivery aliquot. Store at -20°C or -80°C. Avoid freeze / thaw cycle.

pH: 7.50
Preservative: 0.68% Imidazole
Constituents: 0.0087% PMSF, 0.0154% DTT, 0.158% Tris HCl, 10% Glycerol, 0.58% Sodium chloride

This product is an active protein and may elicit a biological response in vivo, handle with caution.

General Info

Function

Ubiquitin-like protein that can be covalently attached to proteins as a monomer or a lysine-linked polymer. Covalent attachment via an isopeptide bond to its substrates requires prior activation by the E1 complex SAE1-SAE2 and linkage to the E2 enzyme UBE2I, and can be promoted by E3 ligases such as PIAS1-4, RANBP2 or CBX4. This post-translational modification on lysine residues of proteins plays a crucial role in a number of cellular processes such as nuclear transport, DNA replication and repair, mitosis and signal transduction. Involved for instance in targeting RANGAP1 to the nuclear pore complex protein RANBP2. Polymeric SUMO1 chains are also susceptible to polyubiquitination which functions as a signal for proteasomal degradation of modified proteins. May also regulate a network of genes involved in palate development.

Involvement in disease

Defects in SUMO1 are the cause of non-syndromic orofacial cleft type 10 (OFC10) [MIM:613705]; also called non-syndromic cleft lip with or without cleft palate 10. OFC10 is a birth defect consisting of cleft lips with or without cleft palate. Cleft lips are associated with cleft palate in two-third of cases. A cleft lip can occur on one or both sides and range in severity from a simple notch in the upper lip to a complete opening in the lip extending into the floor of the nostril and involving the upper gum. Note=A chromosomal aberation involving SUMO1 is the cause of OFC10. Translocation t(2;8)(q33.1;q24.3). The breakpoint occurred in the SUMO1 gene and resulted in haploinsufficiency confirmed by protein assays.

Sequence similarities

Belongs to the ubiquitin family. SUMO subfamily.
Contains 1 ubiquitin-like domain.

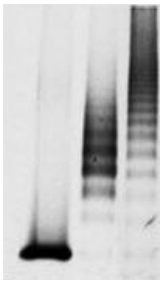
Post-translational modifications

Cleavage of precursor form by SENP1 or SENP2 is necessary for function.
Polymeric SUMO1 chains undergo polyubiquitination by RNF4.

Cellular localization

Nucleus membrane. Nucleus speckle. Cytoplasm. Recruited by BCL11A into the nuclear body.

Images



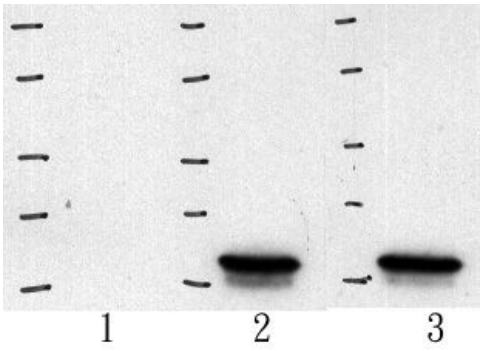
SDS-PAGE - Recombinant human Sumo 1 protein (ab3801)

Left Lane: Topo I protein (Topo I fragment: ab3828)

Middle Lane: Sumo 1 sumoylated Topo I (Sumo 1: ab3801; Topo I fragment: ab3828; EI: ab3804; EII: ab3803; Buffer: ab3827)

Right Lane: Sumo 3 sumoylated Topo I (Sumo 3: ab3802; Topo I fragment: ab3828; EI: ab3804; EII: ab3803; Buffer: ab3827)

Note: Topo I is S^{35}-Met labeled.



SDS-PAGE - Recombinant human Sumo 1 protein (ab3801)

15% SDS PAGE loaded with 0.1 µg SUMO 1 (ab3801)

Markers: 64,50,36,30,16 kDa

Lane 1: Topoisomerase I antibody 5000x (negative control)

Lane 2: Sumo 1 Ab (ab3819) 5000x

Lane 3: Sumo 1 Ab (ab3824) 5000x

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