RanGAP1 fragment (human), (recombinant) (GST-tag)

Post-translational modification by ubiquitin and ubiquitin-like proteins (Ubls) is an essential cellular regulatory mechanism, allowing rapid and reversible control of a target protein's function by altering its half-life, sub-cellular localization, enzymatic activity, protein-protein interactions, or other properties. Ubiquitin itself can direct its targets to a number of different fates, including proteasomal degradation and membrane protein transport. Ubls also control critical cellular functions. For example, NEDD8 activates SCF and related ubiquitin ligases, ISG15/UCRP is induced during in the antiviral interferon response, Apg12p and Apg8p regulate the autophagy pathway, and Hub1p modifies cell polarity factors. The Ubl SUMO regulates a growing number of recognized proteins involved in the cell cycle, DNA repair, the stress response, nuclear transport, transcription, and signal transduction. The first protein shown to be post-translationally modified with SUMO is the RanGTPase-activating protein RanGAP1 . In higher eukaryotes, the cellular localization of RanGAP1 is regulated by SUMOylation of its C-terminal domain. During interphase, RanGAP1 is bound to the cytoplasmic side of the nuclear pore complex via a sumoylationdependent interaction with the IR domain of the large nucleoporin RanBP2/Nup358. This localization is required to help create and maintain the spatial gradient of the GTP-bound versus GDP-bound forms of Ran across the nuclear envelope necessary to drive nucleocytoplasmic transport. During mitosis, the nuclear envelope breaks down, destroying the Ran-GTP gradient. However, another Ran-GTP gradient is established to help mitotic spindle assembly. In vertebrates a requisite for the formation of this gradient is the localization of sumoylated RanGAP1 in complex with RanBP2 at the mitotic spindle and with the kinetochores. It has been demonstrated that the target lysine of RanGAP1, as well as the C-terminus of mature SUMO-1, lie within mobile regions of the two proteins. Upon SUMOylation, RanGAP1 and SUMO-1 behave as "beads-on-a-string" joined by a flexible isopeptide tether and their structures and local dynamic features do not change significantly beyond the site of this covalent linkage. The RanGAP1 enzyme acts as a very good control substrate for use in SUMOylation assays producing a product with a single SUMO modification.

Citations: 4

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Ordering Information

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BML-UW9755-0100	100µg

Manuals, SDS & CofA

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Handling & Storage

Handling	Avoid freeze/thaw cycles. After opening, prepare aliquots and store at -80°C.
Long Term Storage	-80°C
Shipping	Dry Ice

Regulatory Status

RUO - Research Use Only

Product Details

Application Notes	RanGAP1 acts as a very good control substrate for use in SUMOylation assays producing a product with a single SUMO modification.
Formulation	Liquid. In 50mM TRIS, pH 7.5, containing 0.5mM dithiothreitol and 150mM sodium chloride.
Purity	≥90% (SDS-PAGE)
Sequence	Residues 418-587 of RanGAP1 fused to an N-terminal GST tag.
Source	Produced in *E. coli.*. Residues 418-587 of RanGAP1 fused to an N-terminal GST tag.
UniProt ID	P46060

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