

Biotinylated K33-Linked Tetra-Ubiquitin) (Phosphorylated)

Cat. # SI3304BP

Background

Ubiquitin Chains are essential components in the study of protein degradation pathways, protein trafficking, and cellular signaling. These polymeric chains of ubiquitin molecules play critical roles in regulating protein stability, localization, and activity. K33-linked ubiquitination is traditionally associated with the regulation of the innate immune response. In addition, these chain types are implicated in protein stabilization and other non-degradative cellular processes. Phosphorylated ubiquitin chains represent a specialized class of polyubiquitin characterized by phosphorylation at serine 65 and play a central role in mitophagy signaling pathways.

K33 Tetra-Ubiquitin is a tetrameric chain composed of wild-type ubiquitin monomers enzymatically linked via isopeptide bonds between lysine 33 (K33) of one ubiquitin and the C-terminal glycine of the next. These tetra-ubiquitin chains are then biotinylated on a cysteine residue that was mutated in one of the ubiquitin monomers, allowing the attachment of a single biotin molecule.

Application(s)

- Labeling proteins with biotinylated chains for selective separation via methods such as Western blotting, pull-downs (see website), ELISAs, etc.
- Visualizing the labeled proteins using streptavidin or avidin.
- Investigating phospho-ubiquitin chain specificity and selectivity.
- Studying the role of phospho-ubiquitin chains in protein degradation pathways (e.g., proteasomal and autophagic degradation).
- Analyzing phospho-ubiquitin-mediated signaling pathways and cellular responses.
- Conducting structural studies to elucidate the architecture and dynamics of phospho-ubiquitin chains.
- Performing screening assays to identify modulators of phospho-ubiquitin chain assembly and disassembly processes.

Product Specifications

Tag	Biotin
Purity	≥ 95% by HPLC-MS
Molecular Weight	34842-35082 Da (depending on degree of phosphorylation)
Quantity	25 µg
Species	Human
Expression System	<i>E. Coli</i>
Physical State	Liquid
Buffer	50 mM Tris, pH 7.5, 150 mM NaCl
Solubility	>1 mg/ml
Storage	-80°C. Avoid repeated freeze/thaw cycles

References

1. Van Huizen, M. & Kikkert, M. The Role of Atypical Ubiquitin Chains in the Regulation of Antiviral Innate Immune Response. *Front. Cell. Dev. Biol.* **2019**, 7, 392.
2. Tracz, M.; Bialek, W. Beyond K48 and K63: Non-Canonical Protein Ubiquitination. *Cell. Mol. Biol. Lett.* **2021**, 26, 1.
3. Swatek, K.N. & Komander, D. Ubiquitin Modifications. *Cell Res.* **2016**, 26, 399-422.
4. Yau, R. & Rape, M. The increasing complexity of the ubiquitin code. *Nature Cell. Bio.* **2016**, 18, 579-586.

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