Biotinylated K48-Linked Tetra-Ubiquitin (Phosphorylated)

Cat. # SI4804BP

Background:

Ubiquitin Chains are essential components in the study of protein degradation pathways, protein trafficking, and cellular signaling processes. These polymeric chains of ubiquitin molecules play critical roles in regulating protein stability, localization, and activity. K48 chains traditionally play a role in proteasomal degradation pathways. K48 chains traditionally play a role in proteasomal degradation pathways. Once considered the hallmark of this post-translational modification. It is now clear that many, if not all, poly-Ub chain topologies likely play distinct and important roles in regulating cellular processes. Nevertheless, K48 linkage remains a critical pathway for the cells to maintain homeostasis through proteolytic degradation, and as such remains very intriguing for the study of DUBs that play a role in the degradation, as well as the proteasome itself. Phospho-ubiquitin chains represent a specialized class of polyubiquitin characterized by phosphorylation at Serine 65 and play a central role in mitophagy signaling pathways specific to the PINK1/Parkin pathways.

K48 Tetra-Ubiquitin (phosphorylated) is a tetrameric chain of wild-type ubiquitin, wherein ubiquitin monomers are linked together via an isopeptide bond between Lysine 48 and the C-terminal Glycine. The chains are then enzymatically phosphorylated at the Ser65 position. Once phosphorylated, these tetra ubiquitin are then biotinylated on an available cysteine that was mutated in one of the ubiquitins to allow for one biotin molecule to be attached.

Application:

- Biotinylated chains are meant to label the protein so they can be selectively separated via a multitude of methods such as Western Blotting, pull downs (see website), ELISAs, etc.
- Can use streptavidin or avidin to visualize this protein specifically.
- Investigation of phosphoubiquitin chain specificity and selectivity
- Studies on the role of phosphoubiquitin chains in protein degradation pathways (e.g., proteasomal and autophagic degradation)
- Analysis of phosphoubiquitin-mediated signaling pathways and cellular responses
- Structural studies to elucidate the architecture and dynamics of phosphoubiquitin chains
- Screening assays to identify modulators of phosphoubiquitin chain assembly and disassembly processes

Product Information

Purity:	≥ 95% by HPLC-MS
Molecular Weight:	34842-35082 Da
Physical State:	Liquid, 50 mM Tris, pH 7.5, 0.15 M NaCl
Quantity:	25 μg
Solubility:	>1 mg/mL
Storage:	-80° C. Avoid repeated freeze/thaw cycles

References

1. Ohtake, F. Branched Ubiquitin Code: From Basic Biology to Targeted Protein Degradation. *J. Biochem.* **2022**, *171*, 361-366.
2. Swatek, K.N. & Komander, D. Ubiquitin Modifications. Cell Res. **2016**, *26*, 399-422.
3. Yau, R. & Rape, M. The increasing complexity of the ubiquitin code. Nature Cell. Bio. **2016**, 18, 579-586.

Data

HPLC

Deconvoluted Mass Spectrum