# Biotinylated K48-Linked Tetra Ubiquitin (Ub4)

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## Background

Polyubiquitination of target proteins through lysine 48 (K48) is the most thoroughly studied of the various ubiquitin chain linkages and was once considered the hallmark of ubiquitination. It is now clear that many, if not all, polyubiquitin chain topologies play distinct and important roles in regulating cellular processes. Nevertheless, K48-linked polyubiquitination remains the primary signal for proteasome-mediated degradation.

K48-linked tetra-ubiquitin chains are generated enzymatically using the E2-25K enzyme, which links wild-type ubiquitin molecules through lysine 48. The most distal ubiquitin in the chain contains an arginine substitution at position 48, preventing further elongation and limiting chain length. These tetra-ubiquitin chains are then biotinylated on a mutated cysteine introduced into one of the ubiquitin monomers, allowing the attachment of a single biotin molecule.

## Application(s)

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

## Product Specifications

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|---|---|
| **Tag** | Biotin |
| **Purity** | ≥ 95% by HPLC-MS |
| **Molecular Weight** | 34,460 Da (Calculated) |
| **Quantity** | 25 μg |
| **Species** | Human |
| **Expression System** | *E. Coli* |
| **Physical State** | Liquid |
| **Buffer** | 50 mM Tris-HCl, pH 7.5, 150 mM NaCl |
| **Solubility** | > 1mg/mL |
| **Stability & 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.