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MATERIAL DATA SHEET

Recombinant Human Ubiquitin Mutant with K27 only
Cat. # UM-K270

Ubiquitin is a 76 amino acid (aa) protein that is ubiquitously expressed in all eukaryotic organisms. Ubiquitin is highly conserved with 96% aa sequence identity shared between human and yeast Ubiquitin, and 100% aa sequence identity shared between human and mouse Ubiquitin (1). In mammals, four Ubiquitin genes encode for two Ubiquitin-ribosomal fusion proteins and two poly-Ubiquitin proteins. Cleavage of the Ubiquitin precursors by deubiquitinating enzymes gives rise to identical Ubiquitin monomers each with a predicted molecular weight of 8.6 kDa. Conjugation of Ubiquitin to target proteins involves the formation of an isopeptide bond between the C-terminal glycine residue of Ubiquitin and a lysine residue in the target protein. This process of conjugation, referred to as ubiquitination or ubiquitylation, is a multi-step process that requires three enzymes: a Ubiquitin-activating (E1) enzyme, a Ubiquitin-conjugating (E2) enzyme, and a Ubiquitin ligase (E3). Ubiquitination is classically recognized as a mechanism to target proteins for degradation and as a result, Ubiquitin was originally named ATP-dependent Proteolysis Factor 1 (APF-1) (2,3). In addition to protein degradation, ubiquitination has been shown to mediate a variety of biological processes such as signal transduction, endocytosis, and post-endocytic sorting (4-7).

This Ubiquitin mutant contains only a single lysine, K27, with all other lysines mutated to arginine. This mutation renders Ubiquitin able to form poly-Ubiquitin chains with other Ubiquitin molecules only via the K27 lysine.

Product Information	
Quantity:	1 mg
MW:	8.7 kDa
Source:	*E. coli*-derived Accession # P0CG47
Stock:	Lyophilized from a solution in sterile, deionized water
Purity:	>95%, by SDS-PAGE under reducing conditions and visualized by Colloidal Coomassie® Blue stain.

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Use & Storage

Use: The lysine residue utilized for Ubiquitin chain formation is functionally important. Single lysine Ubiquitin mutants are ideal for investigating biological processes involving specific Ubiquitin chain linkage. Recombinant Human Ubiquitin K27-only allows for the formation of only K27-linked Ubiquitin chains. Reaction conditions will need to be optimized for each specific application. We recommend an initial Recombinant Human Ubiquitin K27-only concentration of 0.2-1 mM.

Storage: **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**

- 12 months from date of receipt, -20 to -70 °C as supplied.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

Literature

References:

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5. Tong, X. *et al*. (2012) J. Biol. Chem. **287**:25280.
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7. Wertz, I.E. *et al*. (2004) Nature **430**:694.

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