

Lot # XXXXX

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MATERIAL DATA SHEET

ISG15, low endotoxin, *human recombinant*

Cat. # UL-605

Interferon-stimulated Gene 15 (ISG15), also known as Ubiquitin Cross-reacting Protein (UCRP), is a Ubiquitin-like protein that is covalently coupled to target proteins in a process termed ISGylation. It is a 165 amino acid (aa) polypeptide with a predicted molecular weight of 18 kDa. ISG15/UCRP exhibits 66% aa sequence identity with its mouse ortholog. Structurally, ISG15/UCRP consists of two tandem Ubiquitin-like domains that share a similar 3-dimensional structure with Ubiquitin and other Ubiquitin-like modifiers including NEDD8 and SUMO1. Modification of targets by ISG15/UCRP occurs in a stepwise enzymatic process similar to that of Ubiquitin. Enzymes regulating ISGylation include the activating (E1) enzyme UBE1L, the conjugating (E2) enzyme UBE2L6, and ligases (E3) such as HERC5. Removal of ISG15/UCRP is catalyzed by the deconjugating enzyme UBP43/USP18. Functionally, ISG15/UCRP has putative roles in the immune response and tumorigenesis. This is reflected by intracellular ISG15/UCRP targets that include Cyclin D1, tumor suppressor p63, IRF3, and a range of viral proteins. It is induced by type 1 interferons and microbial infection, and knockout mice exhibit an increased sensitivity to infection by some viruses. ISG15/UCRP can also be secreted by cells of the immune system and may act in a cytokine-like manner. For instance, it is produced by human granulocytes in response to mycobacterium exposure, and natural killer cells and T cells respond to extracellular ISG15/UCRP with IFN-gamma production. Further supporting a role in immune function, ISG15/UCRP mutations are associated with MSMD, an inherited disorder characterized by increased susceptibility to mycobacterial infection.

Product Information

Quantity:	500 µg
Stock:	X mg/ml (X µM) in 50 mM HEPES pH 7.5, 100 mM NaCl, 10% (v/v) Glycerol, 2 mM TCEP
MW:	19 kDa
Purity:	> 95% by SDS-PAGE under reducing conditions and visualized by Colloidal Coomassie Blue stain.

Use & Storage

Use:	Recombinant Human ISG15 can be conjugated to substrate proteins via the subsequent actions of an ISG15-activating (E1) enzyme, an ISG15-conjugating (E2) enzyme, and an ISG15 ligase (E3). Reaction conditions will need to be optimized for each specific application. We recommend an initial ISG15 concentration of 10 - 100 µM.
Storage:	Store at -80°C. Avoid multiple freeze/thaw cycles.

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Literature

- References:** Malakhov, M.P. *et al.* (2002) J. Biol. Chem. **277**: 9976.
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Zhao, C. *et al.* (2004) Proc. Natl. Acad. Sci. USA **101**: 7578.
Zou, W. & D.E. Zhang (2006) J. Biol. Chem. **281**: 3989.

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