

## Insulin Receptor Protein, Human, Recombinant (long isoform, His)

### General Information

Synonyms:	HHF5;CD220;insulin receptor
Protein Construction:	A DNA sequence encoding the human INSR isoform long (NP_000199.2) extracellular domain (Met1-Lys956) was expressed fused with a polyhistidine tag at the C-terminus. Predicted N terminal: His 28 & Ser 763
Species:	Human
Expression Host:	HEK293 Cells
Accession:	P06213-1
Molecular Weight:	107 kDa (predicted); 110-125 kDa & 40-45 kDa (reducing condition, due to glycosylation)

### QC Testing

Biological Activity:	Recombinant Human Insulin Receptor Protein (long isoform), His Tag (Cat#TMPY-01146) captured on CM5 chip via Anti-His antibody, can bind Insulin with an affinity constant of 352 nM as determined in an SPR assay (Biacore T200) (QC tested).
Purity:	> 95 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

### Preparation and Storage

Reconstitution:	Reconstituted with sterile deionized water to 0.25 mg/mL. Reconstitution conditions may vary depending on the lot.
Stability & Storage:	It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots. <small>Actual storage temperature shall be subject to the COA.</small>
Shipping:	In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

### Protein Background

INSR (Insulin receptor), also known as CD22, is a transmembrane receptor that is activated by insulin. INSR belongs to the protein kinase superfamily and exists as a tetramer consisting of two alpha subunits and two beta subunits linked by disulfide bonds. The alpha and beta subunits are encoded by a single INSR gene, and the beta subunits

pass through the cellular membrane. As the receptor for insulin with tyrosine-protein kinase activity, INSR associates with downstream mediators upon binding to insulin, including IRS1 (insulin receptor substrate 1) and phosphatidylinositol 3'-kinase (PI3K). IRS-1 binding and phosphorylation eventually lead to an increase in the high-affinity glucose transporter (Glut4) molecules on the outer membrane of insulin-responsive tissues. INSR isoform long and isoform short are expressed in the peripheral nerve, kidney, liver, striated muscle, fibroblasts and skin, and is found as a hybrid receptor with IGF1R which also binds IGF1 in muscle, heart, kidney, adipose tissue, skeletal muscle, hepatoma, fibroblasts, spleen, and placenta. Defects in Insulin Receptor/INSR are the cause of Rabson-Mendenhall syndrome (Mendenhall syndrome), insulin resistance (Ins resistance), leprechaunism (Donohue syndrome), and familial hyperinsulinemic hypoglycemia 5 (HHF5). It may also be associated with noninsulin-dependent diabetes mellitus (NIDDM).

### Reference

Ebina Y., et al.,(1985), The human insulin receptor cDNA: the structural basis for hormone-activated transmembrane signalling. *Cell* 40:747-758.

Ullrich A., et al., (1985), Human insulin receptor and its relationship to the tyrosine kinase family of oncogenes. *Nature* 313:756-761.

Grimwood J., et al.,(2004), The DNA sequence and biology of human chromosome 19. *Nature* 428:529-535.

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