



Recombinant Mouse INSR Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP51279

Size: 10ug, 100ug

Protein Name: Insulin receptor (IR) (EC 2.7.10.1) (CD antigen CD220) [Cleaved into: Insulin receptor subunit alpha; Insulin receptor subunit beta]

Synonym: Insr

UniProt ID: P15208

UniProt Link: www.uniprot.org/uniprotkb/P15208/entry

Species Source: Mouse

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 1372 AA

Molecular Weight: 156 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MGFGRGCETTAVPLLVAVAALLVGTAGHLYPGEVCPGMDIRNNLTRHELENCVIEGHLQILLMFKT
RPEDFRDLSPFKLIMITDYLLFRVYGLESLKDLFPNLTVIRGSRLFFNYALVIFEMVHLKELGLYNLMN
ITRGSVRIEKNNELCYLATIDWSRILDSVEDNYIVLNKDDNEECGDVCPGTAKGKTNCPATVINGQFV
ERCWTHSHCQKVCPTICKSHGCTAEGLCCHKECLGNCSEPDDPTKCVACRNFYLDGQCVETCPPP
YYHFQDWRCVNFSCQDLHFKCRNSRKPCHQYVIHNNKCIPECPSGYTMSSNLMCTPCLGPCP
KVCQILEGEKTIDSVTSAQELRGCTVINGSLIINIRGGNNLAAELEANLGLIEEISGFLKIRRSYALVLSF
FRKLHLIRGETLEIGNYSFYALDNQNLRLQWDWSKHNLITQGKLFFHYNPKLCLSEIHKMEEVSGTK
GRQERNIDIALKTNGDQASCENELLKFSFIRTSFDKILLRWEPYWPPDFRDLLGFMLFYKEAPYQNV
EFDGQDACGSNSWTVVDIDPPQRSNDPKSQTPSHPGWLMRGLKPWTQYAFVKTLVTFSDERRTY
GAKSDIYVQTDATNPSPVPLDISVSNSSSQILKWKPPSPDNGNITHYLVYWERQAEDSELFELDYL
KGLKLPSRTWSPPFESDDSQKHNSQSEYDDSAECCSCPKTDSQILKELEESSFRKTFEDYLHN
VPRPSRKRRSLEEVGNVTATTLTPDFPNVSSTIVPTSQEEHRPFKEKVVNKESLVISGLRHFTGYRIE
LQACNQDSPDERCSVAAYVSARTMPEAKADDIVGPVTHEIFENNVVHLMWQEPKEPNGLIVLYEVS
YRRYGDEELHLCVSRKHFALEGRGRLGLSPGNYSVRVRATSLAGNGSWTEPTYFYVTDYLDVPSNI
AKIIIGPLIFVFLFSVIGSIYFLRKRQPDGPMGPLYASSNPEYLSASDVFPSSVYVPDEWEVPREKIT
LLRELGGQSGFMVYEGNAKDIIKGEATRVAVKTVNESASLRERIEFLNEASVMKGFTCHHVVRLLG
VVSKGQPTLVVMEHMAHGDLDKSHLRSLRPDAENNPGRPPPTLQEMIQMTAEIADGMAYLNAKKFVH
RDLAARNCMVAHDFTVKIGDFGMTRDIYETDYRKGKGKLLPVRWMSPELKDGVFTASSDMWSF



GVVLWEITSLAEQPYQGLSNEQVLKFVMDGGYLDPPDNCPERLTDLMRMCWQFNPKMRPTFLEIV
NLLKDDLHPSFPEVSFFYSEENKAPESSELEMEFEDMENVPLDRSSHQCREEAGGREGGSSLSIKR
TYDEHIPYTHMNGGKKNRVLTLPRSNPS

3. Buffer Composition

Liquid format: PBS-based buffer containing 50% glycerol. Glycerol concentration can be customized upon customer request; please state special requirements when placing your order.

Lyophilized format: Buffer before lyophilization is PBS supplemented with 6% trehalose.

4. Storage Conditions

Upon receipt, store the product at -20 °C or -80 °C. Aliquot the product for on-demand use to preserve protein activity and prevent denaturation and inactivation caused by repeated freeze-thaw cycles.

5. Product Description

This product is recombinant Insulin receptor (IR) (EC 2.7.10.1) (CD antigen CD220) [Cleaved into: Insulin receptor subunit alpha; Insulin receptor subunit beta] produced using the HEK293T eukaryotic cell expression system. It is suitable for in-vitro functional assays, protein-protein interaction studies, antibody preparation and other biomedical research applications.

Protein Function: Receptor tyrosine kinase which mediates the pleiotropic actions of insulin (PubMed:38061240). Binding of insulin leads to phosphorylation of several intracellular substrates, including, insulin receptor substrates (IRS1, 2, 3, 4), SHC, GAB1, CBL and other signaling intermediates. Each of these phosphorylated proteins serve as docking proteins for other signaling proteins that contain Src-homology-2 domains (SH2 domain) that specifically recognize different phosphotyrosine residues, including the p85 regulatory subunit of PI3K and SHP2. Phosphorylation of IRSs proteins lead to the activation of two main signaling pathways: the PI3K-AKT/PKB pathway, which is responsible for most of the metabolic actions of insulin, and the Ras-MAPK pathway, which regulates expression of some genes and cooperates with the PI3K pathway to control cell growth and differentiation. Binding of the SH2 domains of PI3K to phosphotyrosines on IRS1 leads to the activation of PI3K and the generation of phosphatidylinositol-(3, 4, 5)-triphosphate (PIP3), a lipid second messenger, which activates several PIP3-dependent serine/threonine kinases, such as PDK1 and subsequently AKT/PKB. The net effect of this pathway is to produce a translocation of the glucose transporter SLC2A4/GLUT4 from cytoplasmic vesicles to the cell membrane to facilitate glucose transport. Moreover, upon insulin stimulation, activated AKT/PKB is responsible for: anti-apoptotic effect of insulin by inducing phosphorylation of BAD; regulates the expression of gluconeogenic and lipogenic enzymes by controlling the activity of the winged helix or forkhead (FOX) class of transcription factors. Another pathway regulated by PI3K-AKT/PKB activation is mTORC1 signaling pathway which regulates cell growth and metabolism and integrates signals from insulin. AKT mediates insulin-stimulated protein synthesis by phosphorylating TSC2 thereby activating mTORC1 pathway. The Ras/RAF/MAP2K/MAPK pathway is mainly involved in mediating cell growth, survival and cellular differentiation of insulin. Phosphorylated IRS1 recruits GRB2/SOS complex, which triggers the activation of the Ras/RAF/MAP2K/MAPK pathway. In addition to binding insulin, the insulin receptor can bind insulin-like growth factors (IGF1 and IGFII). When present in a hybrid receptor with IGF1R, binds IGF1 (By similarity). In adipocytes, inhibits lipolysis (PubMed:27322061).

Subcellular Localization: Cell membrane ; Single-pass type I membrane protein . Recycling endosome membrane . Late endosome . Lysosome . Note=Binding of insulin to INSR induces internalization and lysosomal degradation of the receptor, a means for down-regulating this signaling

pathway after stimulation. In the presence of SORL1, internalized INSR molecules are redirected back to the cell surface, thereby preventing their lysosomal catabolism and strengthening insulin signal reception.

6. Notes

- Avoid repeated freeze-thaw cycles to maintain protein stability and biological activity.
- Please specify special buffer-composition requirements at the time of order placement.
- For research use only. Not intended for clinical diagnosis, therapeutic use or commercial manufacturing.