

## Insulin R/CD220 Protein, Human (HEK293, C-His)

Cat. No.:	HY-P73873A
Synonyms:	CD 220; HHF5; INSR; Insulin R; Insulin receptor; IR
Species:	Human
Source:	HEK293
Accession:	P06213 (H28-K956)
Gene ID:	3643
Molecular Weight:	Approximately 130 kDa

### PROPERTIES

#### AA Sequence

H L Y P G E V C P G	M D I R N N L T R L	H E L E N C S V I E	G H L Q I L L M F K
T R P E D F R D L S	F P K L I M I T D Y	L L L F R V Y G L E	S L K D L F P N L T
V I R G S R L F F N	Y A L V I F E M V H	L K E L G L Y N L M	N I T R G S V R I E
K N N E L C Y L A T	I D W S R I L D S V	E D N Y I V L N K D	D N E E C G D I C P
G T A K G K T N C P	A T V I N G Q F V E	R C W T H S H C Q K	V C P T I C K S H G
C T A E G L C C H S	E C L G N C S Q P D	D P T K C V A C R N	F Y L D G R C V E T
C P P P Y Y H F Q D	W R C V N F S F C Q	D L H H K C K N S R	R Q G C H Q Y V I H
N N K C I P E C P S	G Y T M N S S N L L	C T P C L G P C P K	V C H L L E G E K T
I D S V T S A Q E L	R G C T V I N G S L	I I N I R G G N N L	A A E L E A N L G L
I E E I S G Y L K I	R R S Y A L V S L S	F F R K L R L I R G	E T L E I G N Y S F
Y A L D N Q N L R Q	L W D W S K H N L T	I T Q G K L F F H Y	N P K L C L S E I H
K M E E V S G T K G	R Q E R N D I A L K	T N G D Q A S C E N	E L L K F S Y I R T
S F D K I L L R W E	P Y W P P D F R D L	L G F M L F Y K E A	P Y Q N V T E F D G
Q D A C G S N S W T	V V D I D P P L R S	N D P K S Q N H P G	W L M R G L K P W T
Q Y A I F V K T L V	T F S D E R R T Y G	A K S D I I Y V Q T	D A T N P S V P L D
P I S V S N S S S Q	I I L K W K P P S D	P N G N I T H Y L V	F W E R Q A E D S E
L F E L D Y C L K G	L K L P S R T W S P	P F E S E D S Q K H	N Q S E Y E D S A G
E C C S C P K T D S	Q I L K E L E E S S	F R K T F E D Y L H	N V V F V P R K T S
S G T G A E D P R P	S R K R R S L G D V	G N V T V A V P T V	A A F P N T S S T S
V P T S P E E H R P	F E K V V N K E S L	V I S G L R H F T G	Y R I E L Q A C N Q
D T P E E R C S V A	A Y V S A R T M P E	A K A D D I V G P V	T H E I F E N N V V
H L M W Q E P K E P	N G L I V L Y E V S	Y R R Y G D E E L H	L C V S R K H F A L
E R G C R L R G L S	P G N Y S V R I R A	T S L A G N G S W T	E P T Y F Y V T D Y
L D V P S N I A K			

#### Biological Activity

Measured by its binding ability in a functional ELISA. When 15 ng/mL of biotinylated recombinant human Insulin is added to serially diluted Recombinant Human Insulin R/CD220, the concentration of Recombinant Human Insulin R/CD220 that produces 50% of the optimal binding response is 730.7 ng/mL.

#### Appearance

Lyophilized powder

<b>Formulation</b>	Lyophilized from a 0.22 µm filtered solution of PBS, pH 7.4.
<b>Endotoxin Level</b>	<1 EU/µg, determined by LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH <sub>2</sub> O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
<b>Storage &amp; Stability</b>	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
<b>Shipping</b>	Room temperature in continental US; may vary elsewhere.

## DESCRIPTION

### Background

The Insulin R/CD220 protein, a receptor tyrosine kinase, orchestrates the diverse actions of insulin through the phosphorylation of multiple intracellular substrates upon insulin binding. These substrates include insulin receptor substrates (IRS1, 2, 3, 4), SHC, GAB1, CBL, and other signaling intermediates. Phosphorylated IRS proteins activate two main signaling pathways: the PI3K-AKT/PKB pathway, pivotal for insulin's metabolic effects, and the Ras-MAPK pathway, which collaborates with PI3K to regulate cell growth and differentiation. The PI3K-AKT/PKB pathway triggers the translocation of the glucose transporter SLC2A4/GLUT4 to the cell membrane, facilitating glucose transport. Activated AKT/PKB, a downstream effector, induces an anti-apoptotic effect by phosphorylating BAD, regulates the expression of metabolic enzymes, and modulates the mTORC1 signaling pathway, integrating insulin signals for cell growth and metabolism. The Ras/RAF/MAP2K/MAPK pathway mediates insulin-induced cell growth, survival, and cellular differentiation. In addition to insulin, the receptor can bind insulin-like growth factors (IGF1 and IGFII). Hybrid receptors composed of IGF1R and INSR isoforms exhibit varying affinities for IGFs and insulin, influencing their activation patterns. Furthermore, in adipocytes, the receptor inhibits lipolysis.

**Caution: Product has not been fully validated for medical applications. For research use only.**

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