Product datasheet

Anti-IGF1 Receptor antibody ab39675

Overview

Product name  Anti-IGF1 Receptor antibody
Description  Rabbit polyclonal to IGF1 Receptor
Host species  Rabbit
Specificity  This antibody detects endogenous levels of total IGF1 Receptor protein. Crossreacts with insulin receptor (P06213) and insulin receptor related protein (P14616).

Tested applications  Suitable for: IHC-P, WB, IHC-Fr
Species reactivity  Reacts with: Mouse, Rat, Human
Immunogen  The antiserum was produced against synthesized non phosphopeptide derived from human IGF1 Receptor around the phosphorylation site of tyrosine1161.
Positive control  WB: HEK-293 and SK-OV3 cells treated with 10 mU/ml insulin. IHC: Human breast carcinoma and brain tumor tissues.

Properties

Form  Liquid
Storage instructions  Shipped at 4°C. Upon delivery aliquot and store at -20°C. Avoid freeze / thaw cycles.
Storage buffer  pH: 7.40
Preservative: 0.02% Sodium azide
Constituents: PBS, 50% Glycerol, 0.87% Sodium chloride

Without Mg2+ and Ca2+
Purity  Immunogen affinity purified
Purification notes  This antibody was affinity purified from rabbit antiserum by affinity chromatography using epitope specific immunogen.
Clonality  Polyclonal
Isotype  IgG

Applications

Our Abpromise guarantee covers the use of ab39675 in the following tested applications.
Function
Receptor tyrosine kinase which mediates actions of insulin-like growth factor 1 (IGF1). Binds IGF1 with high affinity and IGF2 and insulin (INS) with a lower affinity. The activated IGF1R is involved in cell growth and survival control. IGF1R is crucial for tumor transformation and survival of malignant cell. Ligand binding activates the receptor kinase, leading to receptor autophosphorylation, and tyrosines phosphorylation of multiple substrates, that function as signaling adapter proteins including, the insulin-receptor substrates (IRS1/2), Shc and 14-3-3 proteins. Phosphorylation of IRSs proteins lead to the activation of two main signaling pathways: the PI3K-AKT/PKB pathway and the Ras-MAPK pathway. The result of activating the MAPK pathway is increased cellular proliferation, whereas activating the PI3K pathway inhibits apoptosis and stimulates protein synthesis. Phosphorylated IRS1 can activate the 85 kDa regulatory subunit of PI3K (PIK3R1), leading to activation of several downstream substrates, including protein AKT/PKB. AKT phosphorylation, in turn, enhances protein synthesis through mTOR activation and triggers the antiapoptotic effects of IGF1R through phosphorylation and inactivation of BAD. In parallel to PI3K-driven signaling, recruitment of Grb2/SOS by phosphorylated IRS1 or Shc leads to recruitment of Ras and activation of the ras-MAPK pathway. In addition to these two main signaling pathways IGF1R signals also through the Janus kinase/signal transducer and activator of transcription pathway (JAK/STAT). Phosphorylation of JAK proteins can lead to phosphorylation/activation of signal transducers and activators of transcription (STAT) proteins. In particular activation of STAT3, may be essential for the transforming activity of IGF1R. The JAK/STAT pathway activates gene transcription and may be responsible for the transforming activity. JNK kinases can also be activated by the IGF1R. IGF1 exerts inhibiting activities on JNK activation via phosphorylation and inhibition of MAP3K5/ASK1, which is able to directly associate with the IGF1R.

When present in a hybrid receptor with INSR, binds IGF1. PubMed:12138094 shows that hybrid receptors composed of IGF1R and INSR isoform Long are activated with a high affinity by IGF1, with low affinity by IGF2 and not significantly activated by insulin, and that hybrid receptors composed of IGF1R and INSR isoform Short are activated by IGF1, IGF2 and insulin. In contrast, PubMed:16831875 shows that hybrid receptors composed of IGF1R and INSR isoform Long and hybrid receptors composed of IGF1R and INSR isoform Short have similar binding characteristics, both bind IGF1 and have a low affinity for insulin.

Tissue specificity
Found as a hybrid receptor with INSR in muscle, heart, kidney, adipose tissue, skeletal muscle, hepatoma, fibroblasts, spleen and placenta (at protein level). Expressed in a variety of tissues. Overexpressed in tumors, including melanomas, cancers of the colon, pancreas prostate and kidney.

Involvement in disease
Insulin-like growth factor 1 resistance

Sequence similarities
Belongs to the protein kinase superfamily. Tyr protein kinase family. Insulin receptor subfamily. Contains 4 fibronectin type-III domains.

<table>
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<tr>
<th>Application</th>
<th>Abreviews</th>
<th>Notes</th>
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<tbody>
<tr>
<td>IHC-P</td>
<td><img src="https://placeholders.baymaxcdn.com/100x100.png" alt="Stars" /></td>
<td>1/50 - 1/100. Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.</td>
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<tr>
<td>WB</td>
<td><img src="https://placeholders.baymaxcdn.com/100x100.png" alt="Stars" /></td>
<td>1/500 - 1/1000. Predicted molecular weight: 155 kDa.</td>
</tr>
<tr>
<td>IHC-Fr</td>
<td><img src="https://placeholders.baymaxcdn.com/100x100.png" alt="Stars" /></td>
<td>Use at an assay dependent concentration. PubMed: 21873981</td>
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</table>
Contains 1 protein kinase domain.

**Post-translational modifications**

Autophosphorylated on tyrosine residues in response to ligand binding. Autophosphorylation occurs in trans, i.e. one subunit of the dimeric receptor phosphorylates tyrosine residues on the other subunit. Autophosphorylation occurs in a sequential manner; Tyr-1165 is predominantly phosphorylated first, followed by phosphorylation of Tyr-1161 and Tyr-1166. While every single phosphorylation increases kinase activity, all three tyrosine residues in the kinase activation loop (Tyr-1165, Tyr-1161 and Tyr-1166) have to be phosphorylated for optimal activity. Can be autophosphorylated at additional tyrosine residues (in vitro). Autophosphorylated is followed by phosphorylation of juxtamembrane tyrosines and C-terminal serines. Phosphorylation of Tyr-980 is required for IRS1- and SHC1-binding. Phosphorylation of Ser-1278 by GSK-3beta restrains kinase activity and promotes cell surface expression, it requires a priming phosphorylation at Ser-1282. Dephosphorylated by PTPN1.

Polyubiquitinated at Lys-1168 and Lys-1171 through both 'Lys-48' and 'Lys-29' linkages, promoting receptor endocytosis and subsequent degradation by the proteasome. Ubiquitination is facilitated by pre-existing phosphorylation.

Sumoylated with SUMO1.

Controlled by regulated intramembrane proteolysis (RIP). Undergoes metalloprotease-dependent constitutive ectodomain shedding to produce a membrane-anchored 52 kDa C-Terminal fragment which is further processed by presenilin gamma-secretase to yield an intracellular 50 kDa fragment.

**Cellular localization**

Cell membrane.

**Images**

Paraffin-embedded human brain tumor (Ependymoma) tissue stained for IGF1 Receptor using ab39675 at 1/50 dilution in immunohistochemical analysis.
Western blot analysis using IGF1 Receptor antibody (ab39675, Lane 1, 2 and 3) and IGF1 Receptor (phospho-Tyr1161) antibody (ab39398, Lane 4 and 5). Lane 1 and 5 treated with insulin (10mU/ml).

Paraffin-embedded human breast carcinoma tissue stained for IGF1 Receptor using ab39675 at 1/50 dilution in immunohistochemical analysis.

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