

## DESCRIPTION

|                           |  |
|---------------------------|--|
| <b>Species Reactivity</b> | Human  |
| <b>Specificity</b>        | Detects human Insulin R/CD220 in direct ELISAs and Western blots.  |
| <b>Source</b>             | Monoclonal Mouse IgG <sub>2B</sub> Clone # 243523  |
| <b>Purification</b>       | Protein A or G purified from hybridoma culture supernatant   |
| <b>Immunogen</b>          | Mouse myeloma cell line NS0-derived recombinant human Insulin R/CD220<br>His28-Lys944<br>Accession # NP_001073285  |
| <b>Conjugate</b>          | Alexa Fluor 700<br>Excitation Wavelength: 675-700 nm<br>Emission Wavelength: 723 nm  |
| <b>Formulation</b>        | Supplied 0.2 mg/mL in a saline solution containing BSA and Sodium Azide. See Certificate of Analysis for details.<br><br>*Contains <0.1% Sodium Azide, which is not hazardous at this concentration according to GHS classifications. Refer to the Safety Data Sheet (SDS) for additional information and handling instructions. |

## APPLICATIONS

**Please Note:** Optimal dilutions should be determined by each laboratory for each application. [General Protocols](#) are available in the Technical Information section on our website.

|                       | <b>Recommended Concentration</b> | <b>Sample</b>                    |
|-----------------------|----------------------------------|----------------------------------|
| <b>Flow Cytometry</b> | 0.25-1 µg/10 <sup>6</sup> cells  | Human peripheral blood monocytes |

## PREPARATION AND STORAGE

|                                |   |
|--------------------------------|---|
| <b>Shipping</b>                | The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below. |
| <b>Stability &amp; Storage</b> | <b>Protect from light. Do not freeze.</b><br>● 12 months from date of receipt, 2 to 8 °C as supplied.             |

## BACKGROUND

The Insulin Receptor (INS R) and insulin-like growth factor-1 receptor (IGF-1 R) constitute a subfamily of receptor tyrosine kinases (1-4). The two receptors share structural similarity as well as overlapping intracellular signaling events, and are believed to have evolved through gene duplication from a common ancestral gene. INS R cDNA encodes a type I transmembrane single chain preproprotein with a putative 27 amino acid residues (aa) signal peptide. The large INS R extracellular domain is organized into two successive homologous globular domains, which are separated by a Cysteine-rich domain, followed by three fibronectin type III domains. The intracellular region contains the kinase domain sandwiched between the juxtamembrane domain used for docking insulin-receptor substrates (IRS), and the carboxy-terminal tail that contains two phosphotyrosine-binding sites. After synthesis, the single chain INS R precursor is glycosylated, dimerized and transported to the Golgi apparatus where it is processed at a furin-cleavage site within the middle fibronectin type III domain to generate the mature disulfide-linked α<sub>2</sub>β<sub>2</sub> tetrameric receptor. The α subunit is localized extracellularly and mediates ligand binding while the transmembrane β subunit contains the cytoplasmic kinase domain and mediates intracellular signaling. As a result of alternative splicing, two INS R isoforms (A and B) that differ by the absence or presence, respectively, of a 12 aa residue sequence in the carboxyl terminus of the α subunit exist. Whereas the A isoform is predominantly expressed in fetal tissues and cancer cells, the B isoform is primarily expressed in adult differentiated cells. Both the A and B isoforms bind insulin with high-affinity, but the A isoform has considerably higher affinity for IGF-I and IGF-II. Ligand binding induces a conformational change of the receptor, resulting in ATP binding, autophosphorylation, and subsequent downstream signaling. INS R signaling is important in metabolic regulation, but may also contribute to cell growth, differentiation and apoptosis. Mutations in the INS R gene have been linked to insulin-resistant diabetes mellitus, noninsulin-dependent diabetes mellitus and leprechaunism, an extremely rare disorder characterized by abnormal resistance to insulin that results in a variety of distinguishing characteristics, including growth delays and abnormalities affecting the endocrine system. INS R is highly conserved between species, rat INS R shares 94% and 97% aa sequence homology with the human and mouse receptor, respectively.

## References:

1. Nakae, J. *et al.* (2001) *Endoc. Rev.* **22**:818.
2. De Meyts, P. and J. Whittaker (2002) *Nature Rev. Drug Disc.* **1**:769.
3. Kim, J.J. and D. Accili (2002) *Growth Hormone and IGF Res.* **12**:84.
4. Sciacca, L. *et al.* (2003) *Endocrinology* **144**:2650.

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