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ProductInformation

MONOCLONAL ANTI-c-erbB-2 (HER-2, Neu)
CLONE HER2-96
Purified Mouse Immunoglobulin

Product Number **E 2777**

Product Description

Monoclonal Anti-c-erbB-2 (HER-2, Neu) (mouse IgG1 isotype) is derived from the HER2-96 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from a BALB/c mouse immunized with a purified extracellular domain of human erbB-2, from transfected cells.[1] The isotype is determined using Sigma ImmunoType™ Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2).

Monoclonal Anti-c-erbB-2 (HER-2, Neu) specifically reacts with human c-erbB-2 protein.[1,2] The antibody may be used for ELISA (using cells)[1] and in immunoprecipitation. It has also been used in studies on receptor internalization,[1] phosphorylation,[1] ligand binding[1,2] and tumor growth inhibition.[1]

Protooncogenes, encoding growth factor receptors, constitute several distinct families with close overall structural homology. The highest degree of homology is observed in their catalytic domains, essential for the intrinsic tyrosine kinase activity of these proteins.[3] These receptors have a common overall structure consisting of an extracellular domain, a transmembrane region, and a cytoplasmic sequence. The extracellular component has two domains that appear to be responsible for ligand binding, and two cysteine-rich domains that are probably necessary for structural integrity. The cytoplasmic component has a juxtamembrane region, a tyrosine kinase domain, and a carboxy-terminal region containing the mapped sites of autophosphorylation, induced by the binding of specific ligands.

The ErbB/HER family of transmembrane receptor tyrosine kinases includes four members that bind more than two dozens ligands sharing an epidermal growth factor (EGF)-like motif. This family plays a pivotal role in cell lineage determination in a variety of tissues including mesenchyme-epithelial inductive processes, and in the interactions between neurons and muscle, and glia and Schwann cells. Certain ligands and receptors of the family contribute to a relatively virulent phenotype of some human tumors; most notable are carcinomas of secretory epithelia. This large variety of biological signals is generated through a combinatorial network of signal transduction in which different ErbB ligands are apparently capable of stabilizing discrete homo- and heterodimeric ErbB receptor complexes, each coupled to a specific set of cytoplasmic signaling proteins. Because each receptor is unique in terms of catalytic activity, cellular routing and transmodulation, the resulting network allows not only an enormous potential for signal diversification but also fine tuning and stringent control of cellular functions.[4]

The human erbB-2 oncogen (also known as HER2, HER-2 or *neu*) encodes a transmembrane growth factor orphan receptor with a M.W. of 185 kDa (p185). The complete protein consists of an internal cytoplasmic structure with tyrosine kinase activity, a short hydrophobic transmembrane section and an extracellular ligand-binding domain (ECD). The ECD is heavily glycosylated and has a 44% sequence homology with human epidermal growth factor receptor (EGF-R). The ECD is shed into the bloodstream and has a M.W. in the range of 97 kDa to 115 kDa.

ErbB-2 may participate in signal transduction even in the absence of a direct ligand, because it forms heterodimers with erbB-1/EGF-R, erbB-3, and erbB-4, and modulates their ligand affinities.[5] Thus, erbB-2 alters the intracellular responses elicited by EGF and NDF. This control is due to the fact that erbB-2, when in complex with another erbB family receptor, decelerates the rate of ligand dissociation. Therefore, erbB-2 may act as a signaling subunit for other receptors rather than a true growth factor receptor. Because overexpression of the *erbB-2* proto-oncogene is frequently associated with an aggressive clinical course of certain human adenocarcinomas, the encoded protein is an attractive target for immunotherapy. Indeed, antibodies to erbB-2 were found to block the crosstalk with growth factor receptors.[1,2] In addition, receptor overexpression is considered a predictor of poor survival and short time

of relapse. Monoclonal antibody reacting specifically with erbB-2 is a useful tool for the study of the roles of erbB-2 and its interaction with other erbB family members, and the cellular molecular mechanisms underlying tumor growth.

Reagent
Monoclonal Anti-c-erbB-2 (HER-2, Neu) is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: Approx. 2 mg/ml.

Precautions and Disclaimer
Due to the sodium azide content a material safety sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability
For continuous use, store at 2 °C to 8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile
By immunoprecipitation, 0.5 µg to 1 µg of the antibody will precipitate erb-2 from 200 µg of a RIPA lysate of cultured CB2 cells (CHO cell transfected with erb-2).

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working concentration by titration test.

References

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4. Pinkas-Kramarski, R., et al., J. Mammary Gland Biol. Neoplasia, **2**, 97-107 (1997).
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