Anti-Human HER2, Human IgG1, Recombinant

Background:
HER2 is a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases (RTK). Four members of the EGFR family have been identified: EGFR (ERBB1, HER1), HER2 (ERBB2), HER3 (ERBB3) and HER4 (ERBB4). They typically contain an extracellular ligand binding domain (EC), a transmembrane domain (TM), and an intracellular kinase domain that can interact with a multitude of signaling molecules and exhibit both ligand-dependent and ligand-independent activity. EGFR signaling is initiated by ligand binding to the extracellular ligand binding domain. This initiates receptor homo-/hetero-dimerization and autophosphorylation by the intracellular kinase domain, resulting in receptor activation. Following activation, phosphorylation of cytoplasmic substrates occurs and a signaling cascade is initiated that drives cellular responses, including changes in gene expression, cytoskeletal rearrangement, anti-apoptosis and increased cell proliferation. HER2 has no ligand binding domain of its own and therefore cannot bind growth factors. However, it does bind tightly to other ligand-bound EGFR family members to form a heterodimer, stabilizing ligand binding and enhancing kinase-mediated activation of downstream signalling pathways. Amplification or overexpression of HER2 has been reported in multiple cancers, including breast and ovarian tumors. HER2 is the target of several anti-cancer therapeutics.

The purified recombinant monoclonal antibody binds human HER2 with high affinity and inhibits HER2-overexpressing tumor cell growth.

References:
1. Science 230: 1132–9, 1985

Gene Symbol:
HER2

Gene Synonym:
HER-2, ERBB2, CD340, NGL, TKR1, MLN19, HER-2/neu, NEU

Full Name:
Receptor tyrosine-protein kinase erbB-2 (v-erb-b2 erythroid leukemia viral oncogene homolog 2), Metastatic lymph node gene 19 protein

NCBI Gene ID:
2064

UniProt Entry:
P04626

Species:
Homo sapiens

Molecule Class:
Receptor tyrosine kinase (RTK)

Gene Family:
Protein kinase superfamily
Tyrosine protein kinase family
EGF receptor subfamily

Pathway & Disease:
Proto-oncogene
EGFR Signaling Pathway
Cell Proliferation

Research Area:
Cancer Research
Signal Transduction
Targeted Therapeutic

Construct Detail:
Expressed as the combination of a heavy chain (HC) containing VH from anti-HER2 mAb and CH1-3 region of human IgG1 and a light chain (LC) encoding VL from anti-HER2 mAb and CL of human kappa light chain. Exists as a disulfide linked dimer of the HC and LC hetero-dimer under non-reducing condition.

Source:
Mamamlian cells stably expressing anti-HER2 heavy chain and light chain (in human IgG1kappa format) and growing in chemical-defined media with no animal components or antibiotics.

M.W.:
Calculated molecular mass (kDa): 146 (49 kDa for a single HC, 24 kDa for a single LC); Estimated by SDS-PAGE under non-reducing condition(kDa): 150.

Purity:
>95% judged by SDS-PAGE under reducing and non-reducing condition (see the gel image inserted).

Formulation:
Supplied at 1.0 mg/ml in sterile PBS pH7.4 (concentration determined by Protein Bradford assay and verified by SDS-PAGE and Coomassie blue staining).

Endotoxin:
<0.1 EU per 1 µg of purified recombinant protein determined by the LAL method.

Bioactivity:
Binds HER2 extracellular domain (SKU#FCL0220, #FCL0088) with high affinity (KD < 5 nM as measured by ELISA) and recognizes cell surface HER2 by flow cytometry, IHC staining and fluorescent microscopy with the same binding specificity as anti-HER2 mlgG2a (SKU#MAB0061) and rabbit IgG (SKU#MAB0334).

Storage:
The product is shipped at 4°C. Upon receipt, centrifuge the product briefly before opening the vial. It is recommended to store small aliquots at the temperature below −20°C for long-term storage and the product is stable for 3 months. The undiluted protein can be stored at 4°C for no more than 2 weeks. Avoid repeated freeze-thaw cycles.

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