**Human HER2 ECD (Extracellular Domain), 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 (ECD), 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 many 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 cancer types, including breast and ovarian tumors. HER2 is the target for several anti-cancer therapeutics.

**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 erythroblastic leukemia viral oncogene homolog 2); Metastatic lymph node gene 19 protein; Proto-oncogene Neu; p185erbB2

**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:**
EGF/PDGF signaling pathway
Proto-oncogene
Cell Proliferation

**Research Area:**
Cancer
Signal transduction
Targeted therapeutic

**Construct Detail:**
The recombinant human HER2 extracellular or ecto-domain (ECD) is expressed as a 630 amino acid protein consisting of Thr23-Thr652 region of HER2 and a C-terminal poly-His tag, which exists as a monomer under reducing and non-reducing conditions.

**Source:**
Human cells stably expressing HER2 ECD and growing in chemical-defined media with no animal components or antibiotics.

**M.W.:**
Calculated molecular mass (kDa): 70.7; Estimated by SDS-PAGE under reducing condition (kDa): ~75; Calculated extinction coefficients (M-1 cm-1, at 280nm): 65465.

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

**Formulation:**
Supplied at 0.5 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 anti-HER2 mAbs (SKU#MAB0061, #MAB0203, #MAB0334) and HeRceptin with high affinity (Kd<10 nM measured by ELISA with 10 ng of this protein immobilized per well).

**Storage:**
The product is shipped at 4°C. Upon receipt, centrifuge the product briefly before opening the vial. Store small aliquots at the temperature below –20°C for long-term storage and the product is stable for 3 months. Avoid repeated freeze-thaw cycles.

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