HER2 (A775_G776insYVMA), Active
Recombinant human protein expressed in Sf9 cells

Catalog # E27-138G
Lot # Z1335-3

Product Description
Recombinant human HER2 (A775_G776insYVMA) (676-end) was expressed by baculovirus in Sf9 insect cells using an N-terminal GST tag. The gene accession number is NM_004448.

Gene Aliases
NEU; NGL; HER2; TKR1; ERBB2; c-erb B2; HER-2/neu

Formulation
Recombinant protein stored in 50mM Tris-HCl, pH 7.5, 150mM NaCl, 10mM glutathione, 0.1mM EDTA, 0.25mM DTT, 0.1mM PMSF, 25% glycerol.

Storage and Stability
Store product at –70°C. For optimal storage, aliquot target into smaller quantities after centrifugation and store at recommended temperature. For most favorable performance, avoid repeated handling and multiple freeze/thaw cycles.

Scientific Background
HER2 gene encodes a cell-surface glycoprotein tyrosine kinase receptor with extensive homology to the epidermal growth factor receptor. HER2 is an oncogene and overexpression of unaltered HER2 coding sequences in NIH 3T3 cells results in cellular transformation and tumorigenesis (1). HER2 is amplified in about 30% of primary human breast malignancies and overexpression of HER2 is associated with the most aggressive tumors that show uncontrolled proliferation, resistance to apoptosis and increased motility (2).

References

Specific Activity
The specific activity of HER2 (A775_G776insYVMA) was determined to be 3 nmol/min/mg as per activity assay protocol.

Purity
The purity of HER2 (A775_G776insYVMA) was determined to be >85% by densitometry. Approx. MW 116kDa.

HER2 (A775_G776insYVMA), Active
Recombinant human protein expressed in Sf9 cells

Catalog # Specific Activity Concentration Stability Storage & Shipping
E27-138G 3 nmol/min/mg 0.1µg/µl 1 yr at –70°C from date of shipment

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Activity Assay Protocol

Reaction Components

Active Kinase (Catalog #: E27-13BG)
Active HER2 (A775_G776insYVMA) (0.1µg/µl) diluted with Kinase Dilution Buffer IV (Catalog #: K24-09) and assayed as outlined in sample activity plot. (Note: these are suggested working dilutions and it is recommended that the researcher perform a serial dilution of Active HER2 (A775_G776insYVMA) for optimal results).

Kinase Dilution Buffer IV (Catalog #: K24-09)
Kinase Assay Buffer II (Catalog #: K02-09) diluted at a 1:4 ratio (5X dilution) with 50 ng/µl BSA solution.

Kinase Assay Buffer II (Catalog #: K02-09)
Buffer components: 25mM MOPS, pH 7.2, 12.5mM β-glycerol-phosphate, 20mM MgCl2, 25mM MnCl2, 2mM EDTA. Add 0.25mM DTT to Kinase Assay Buffer prior to use.

[33P]-ATP Assay Cocktail
Prepare 250µM [33P]-ATP Assay Cocktail in a designated radioactive working area by adding the following components: 150µl of 10mM ATP Stock Solution (Catalog #: A50-09), 100µl [33P]-ATP (1mCi/100µl), 5.75ml of Kinase Assay Buffer II (Catalog #: K02-09). Store 1ml aliquots at –20°C.

10mM ATP Stock Solution (Catalog #: A50-09)
Prepare ATP stock solution by dissolving 55mg of ATP in 10ml of Kinase Assay Buffer II (Catalog #: K02-09). Store 200µl aliquots at –20°C.

Substrate (Catalog #: P61-58)
Poly (Glu:Tyr, 4:1) synthetic peptide substrate diluted in Tris-HCl buffer (pH 7.5) to a final concentration of 1mg/ml.

Assay Protocol

Step 1. Thaw [33P]-ATP Assay Cocktail in shielded container in a designated radioactive working area.
Step 2. Thaw the Active HER2 (A775_G776insYVMA), Kinase Assay Buffer, Substrate and Kinase Dilution Buffer on ice.
Step 3. In a pre-cooled microfuge tube, add the following reaction components bringing the initial reaction volume up to 20µl:
   Component 1. 10µl of diluted Active HER2 (A775_G776insYVMA) (Catalog #E27-13BG)
   Component 2. 5µl of 1mg/ml stock solution of substrate (Catalog #P61-58)
   Component 3. 5µl distilled H2O (4°C)
Step 4. Set up the blank control as outlined in step 3, excluding the addition of the substrate. Replace the substrate with an equal volume of distilled H2O.
Step 5. Initiate the reaction by the addition of 5µl [33P]-ATP Assay Cocktail bringing the final volume up to 25µl and incubate the mixture in a water bath at 30°C for 15 minutes.
Step 6. After the 15 minute incubation period, terminate the reaction by spotted 20µl of the reaction mixture onto individual pre-cut strips of phosphocellulose P81 paper.
Step 7. Air dry the pre-cut P81 strip and sequentially wash in a 1% phosphoric acid solution (dilute 10ml of phosphoric acid and make a 1L solution with distilled H2O) with constant gentle stirring. It is recommended that the strips be washed a total of 3 intervals for approximately 10 minutes each.
Step 8. Count the radioactivity (cpm) on the P81 paper in the presence of scintillation fluid in a scintillation counter.
Step 9. Determine the corrected cpm by removing the blank control value (see Step 4) for each sample and calculate the kinase specific activity as outlined below.

Calculation of [P33]-ATP Specific Activity (SA) (cpm/pmol)
Specific activity (SA) = cpm for 5µl [33P]-ATP / pmoles of ATP (in 5µl of a 250µM ATP stock solution, i.e., 1250 pmoles)

Kinase Specific Activity (SA) (pmol/min/µg or nmol/min/mg)
Corrected cpm from reaction / ([SA of [33P]-ATP in cpm/pmol]*(Reaction time in min)*(Enzyme amount in µg or mg))*([Reaction Volume] / [Spot Volume])

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