

# Anti-HER2-hIgG1

Recombinant human monoclonal IgG1 antibody against HER2

Catalog code: her2-mab1-1

<https://www.invivogen.com/anti-her2-0>

For research use only

Version 23J12-NJ

## PRODUCT INFORMATION

**Contents:** 1 mg purified Anti-HER2-hIgG1 monoclonal antibody (mAb), provided azide-free and lyophilized

**Target:** Human epidermal growth factor receptor 2 (HER2)

**Variable region biosimilar:** Trastuzumab

**Source:** Chinese hamster ovary (CHO) cells

**Isotype:** Human IgG1, kappa

**Purification:** By affinity chromatography with protein A

**Formulation:** 0.2 µm filtered solution in 150 mM sodium chloride, 20 mM sodium phosphate buffer with 5% saccharose

**Tested applications:** Flow cytometry, Antibody-drug conjugation

### Storage

- Product is shipped at room temperature. Store lyophilized antibody at -20 °C. Lyophilized product is stable for at least 1 year.
- Reconstituted antibody is stable for 1 month at 4 °C and for 1 year at -20 °C. Avoid repeated freeze-thaw cycles.

### Quality control

- Binding of Anti-HER2-hIgG1 to HER2 has been validated using flow cytometry and antibody-drug conjugate (ADC)-based cellular assays.
- The complete sequence of the antibody has been verified.
- Absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue™ TLR2 and TLR4 cellular assays.

## PRODUCT DESCRIPTION

Anti-HER2-hIgG1 is a recombinant monoclonal antibody (mAb) featuring the variable region of trastuzumab which targets human epidermal growth factor receptor 2 (HER2, also known as HER2/neu or ERBB2), and the constant region of the hIgG1 isotype. Anti-HER2-hIgG1 was generated by recombinant DNA technology, produced in CHO cells, and purified by affinity chromatography with protein A.

### IgG1 Isotype effector function

Human IgG1 binds with high affinity to the Fc receptor on phagocytic cells. Therefore, hIgG1 mAbs display high effector function, including antibody-dependent cell-mediated cytotoxicity (ADCC) and complement-dependent cytotoxicity (CDC).

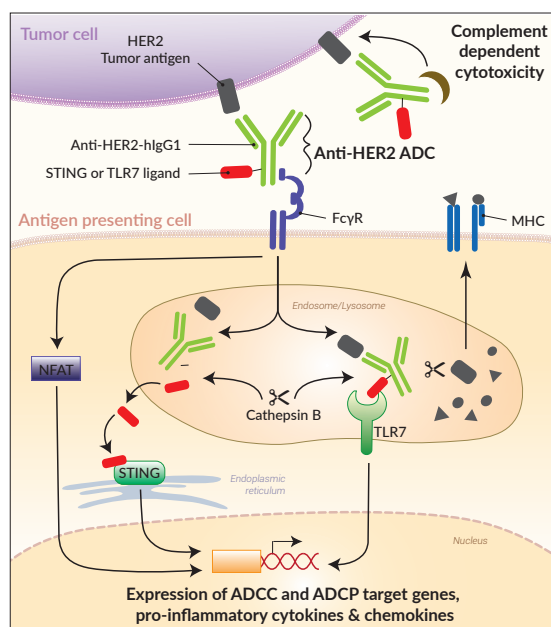
### Applications

Anti-HER2-hIgG1 has been specifically developed for the generation of antibody-drug conjugates. The antibody formulation contains no tris, cysteine, glycine, nor any other amine or thiol function.

## BACKGROUND

HER2 (human epidermal growth factor receptor 2) is a transmembrane protein expressed by epithelial cells that plays an important role in normal cell growth and differentiation<sup>1</sup>. HER2 over-expression causes uncontrollable cell proliferation, as most particularly evidenced in breast and ovarian cancers<sup>1</sup>.

Therapeutic strategies aiming at killing HER2<sup>+</sup> cancer cells use the FDA-approved trastuzumab, an anti-HER2-hIgG1 antibody. Binding of trastuzumab to HER2 results in cell death through different mechanisms, including antibody-dependent cell-mediated cytotoxicity and phagocytosis<sup>2,3</sup>. Antibody-drug conjugates (ADCs) combining trastuzumab with cytotoxic payloads allow targeted drug delivery to cancer cells (thus limiting systemic side-effects) in addition to the mAb-mediated effector functions<sup>4</sup>. Other therapeutic strategies combining trastuzumab with PRR ligands are under investigation to potentiate the anti-tumor immune responses<sup>5</sup>.



1. Rubin I. & Yarden Y. 2001. The basic biology of HER2. *Ann Oncol*.12 Suppl 1:S3.
2. Collins DM. *et al.*, 2012. Trastuzumab induces antibody-dependent cell-mediated cytotoxicity (ADCC) in HER-2-non-amplified breast cancer cell lines. *Ann Oncol*. 23(7):1788.
3. Petricevic B. *et al.*, 2013. Trastuzumab mediates antibody-dependent cell-mediated cytotoxicity and phagocytosis to the same extent in both adjuvant and metastatic HER2/neu breast cancer patients. *J Transl Med*. 11:307.
4. Tarantino P. *et al.*, 2022. Antibody-drug conjugates: smart chemotherapy delivery across tumor histologies. *CA Cancer J Clin*. 72:165.
5. Gingrich J. 2020. How the Next Generation Antibody Drug Conjugates Expands Beyond Cytotoxic Payloads for Cancer Therapy – ADC Review / *Journal of Antibody-drug Conjugates*. DOI: 10.14229/jadc.2020.04.07.001.

## TECHNICAL SUPPORT

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## PROTOCOLS

### Antibody-drug conjugation

For conjugation protocols of the monoclonal antibody to STING or TLR7 agonists, using either cysteine-based thioether coupling or click-chemistry coupling, please refer to the technical data sheets of :

- STG-982 and STG-968, STING agonists with maleimide and azido group, respectively: <https://www.invivogen.com/sting-conjugatable-ligands>.
- TL7-887 and TL7-975, TLR7 agonists with maleimide and azido group, respectively: <https://www.invivogen.com/tlr7-conjugatable-ligands>.

*Note: Anti- $\beta$ -Gal-hlgG1\* mAb can be used to generate control ADC.*

### ADC-mediated cell stimulation

The biological functions of ADCs can be assessed using reporter cell lines co-expressing the targeted tumor antigen and PRR (e.g. STING or TLR7). Examples of such mono-culture models are shown in the validation data sheets of the STG-968 and TL7-975 conjugatable ligands (see URLs above).

Alternatively, the biological functions of ADCs can be assessed using co-cultures of tumor cell lines expressing the targeted tumor antigen and human peripheral blood monocytes (PBMCs), myeloid antigen presenting cells, or reporter THP-1 monocytes. Examples of such co-culture models are shown in the validation data sheets of the Anti-HER2-hlgG1, as well as in different reports<sup>6,7</sup>.

6. Ackerman S.E. *et al.*, 2021. Immune-stimulating antibody conjugates elicit robust myeloid activation and durable antitumor immunity. *Nature Cancer*. 2(1):18-33.

7. Duvall J.R. *et al.*, 2021. XMT-2056, a well-tolerated, Immunosynthen-based STING-agonist antibody-drug conjugate which induces anti-tumor immune activity. *Cancer Research* 81(13):1738.

## RELATED PRODUCTS

Product	Description	Cat.Code
TL7-887	Conjugatable TLR7 ligand	vac-tl7887
TL7-975	Conjugatable TLR7 ligand	vac-tl7975
STG-982	Conjugatable STING ligand	vac-stg982
STG-968	Conjugatable STING ligand	vac-stg968
Anti- $\beta$ -Gal-hlgG1*	Monoclonal antibody	bgal-mab1-1
Anti-TROP2-hlgG1	Monoclonal antibody	trop2-mab1-1
HEK-Blue™ IL-6 cells	IL-6 reporter cells	hkb-hil6
QUANTI-Blue™	Detection reagent	rep-qbs

To learn more about antibody drug conjugates and conjugatable ligands, please visit <https://www.invivogen.com/conjugatable-ligands>.

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