



PRODUCT SPECIFICATION

Recombinant anti-human Epidermal Growth Factor Receptor (EGFR) nanobody EgA1.

Catalogue number: sdAb-EGFR-Nb EgA1.

Background

EGFR (epidermal growth factor receptor) is a well-known transmembrane receptor tyrosine kinase that is activated by its ligand, EGF. Ligand interaction causes dimerization of the receptor and concomitant activation of its tyrosine kinase activity. EGFR is at the top of a signal transduction cascade that has been intensively studied during the past years. In fact, this signal transduction cascade was used as a model for many other similar signal transduction mechanisms that operate via a transmembrane receptor. Mutations in the EGF receptor (leading to amino acid substitutions at specific positions in its primary structure) are associated with several types of cancer (head and neck, lung, brain). Part of the oncogenic effect resides in loss of its normal physiologic regulation. The receptor becomes constitutively active, leading to constant intracellular signalling resulting in uncontrolled cell growth.

Applications: Suitable for immunoprecipitation, ELISA, structural studies. This product is for R&D use only, not for drug, diagnostic, therapeutic, household, or other uses.

Source and properties: EgA1 binds to a region near the EGFR domain II/III junction. It prevents receptor conformational changes that are required for high-affinity ligand binding and dimerization. EgA1 does not directly occlude the ligand-binding site on EGFR. It binds with an affinity of 276 nM. It should be noted that 7D12 binding was reported by the same group to be 219 nM, although others reported 14 nM.

Availability: EgA1 nanobody comes with a COOH-terminal HA epitope tag. Available in 100 µg, 500 µg, 1000 µg quantities. For bulk amounts, please inquire.

Expression host: VHH single domain antibody purified from *E. coli*.

Storage buffer: 20 mM Tris-HCl pH 8.0, 150 mM NaCl, 1mM DTT, 60 % glycerol. Store at -20°C. The sample will not freeze. Maintain sample in cold environment during transport to increase longevity.

Stability: Store at -20°C upon arrival. For long term storage, aliquot and store at -80°C. Avoid repeated freeze/thaw cycles.

Sources:

Schmitz et al. Structural Evaluation of EGFR Inhibition Mechanisms for Nanobodies/VHH Domains. *Structure* 21, 1214–1224 (2013). <http://dx.doi.org/10.1016/j.str.2013.05.00>.
Protein data bank (PDB) <https://www.rcsb.org/structure/4KRN>
Wikipedia.

Citations:

- *Kooijmans et al. (2016) Display of GPI-anchored anti-EGFR nanobodies on extracellular vesicles promotes tumour cell targeting, *Journal of Extracellular Vesicles*, 5:1, 31053, DOI: 10.3402/jev.v5.31053. DOI: <https://doi.org/10.3402/jev.v5.31053>
- *Oliveira et al. Downregulation of EGFR by a novel multivalent nanobody-liposome platform. *Journal of Controlled Release* 145 (2010) 165–175.
- *Schmitz et al. Structural Evaluation of EGFR Inhibition Mechanisms for Nanobodies/VHH Domains. *Structure* 21, 1214–1224 (2013). <http://dx.doi.org/10.1016/j.str.2013.05.00>.
- *Hacisuleyman et al. Fluctuation, correlation and perturbation-response behavior of nature-made and artificial nanobodies. 2021. doi: <https://doi.org/10.1101/2020.02.06.936856>.