Nanobody toolbox for your research

PRODUCT SPECIFICATION

Recombinant anti-human Akt2 Nanobody 5.

Catalogue number: sdAb-Akt2-Nb5.

Background

Protein kinases represent an extensive class of enzymes that phosphorylate substrates in a specific manner resulting in modification of the properties of that substrate. They use ATP as a co-enzyme and Mg^{2+} as a co-factor and transfer the gamma phosphate group from ATP to the hydroxyl group in the side chain of a serine, threonine or tyrosine residue of a protein.

Akt kinases are serine/threonine kinases and come in three highly homologous isoforms (Akt 1, 2, 3) that are non-redundant. They contain an N-terminal plextrin homology (PH) domain that is connected by a linker to the catalytic domain, followed by a C-terminal regulatory region. The Akt kinase is frequently over-activated in cancer and considered as a therapeutic target. However, most small molecule inhibitors are ATP analogs and as such lack sufficient specificity. Allosteric regulators were an improvement but it still remains challenging to obtain Akt isoform-specific inhibitors. In fact, to date there are no effective isoform-specific inhibitors available.

Akt2 Nb5 binds very specifically to the Akt2 isoform, probably to the linker region, or the kinase domain or a region overlapping the boundary of the kinase- and regulatory domain. Unlike Akt2 Nb8, that interacts also very specifically with Akt2, Nb5 does not seem to affect cell survival, proliferation, autophagy or focal adhesion of cells (Merckaert et al., 2020; Merckaert et al., 2021). **This nanobody is a also a very specific Akt2 binder**.

Applications: PD, IP, ELISA. Other applications have not yet been tested. This product is for R&D use only, not for drug, diagnostic, therapeutic, household, or other uses. Not suitable for Western blot.

Source and properties

Akt2 Nb5 was raised by immunizing a llama with the full length human protein, obtained from insect cells.

Availability: Akt Nb5 comes with a COOH-terminal HA or Myc 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*.

Cross reactivity: Reactivity of this nanobody with Akt2 from species other than human has not been tested.

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.

Product citations: /

Literature:

Merckaert, T., O. Zwaenepoel, K. Gevaert, and J. Gettemans. 2020. Development and characterization of protein kinase B/AKT isoform-specific nanobodies. *PLoS One*. 15:e0240554.

Merckaert, T., O. Zwaenepoel, K. Gevaert, and J. Gettemans. 2021. An AKT2-specific nanobody that targets the hydrophobic motif induces cell cycle arrest, autophagy and loss of focal adhesions in MDA-MB-231 cells. *Biomed Pharmacother*. 133:111055.