Nanobody toolbox for your research

PRODUCT SPECIFICATION

Recombinant anti-human Akt2 Nanobodies.

Catalogue number: sdAb-Akt2-Nb8.

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 Nb8 binds very specifically to the hydrophobic motif in the second Akt isoform and was shown to modulate the phosphorylation status of a number of proteins downstream of AKT (Merckaert et al., 2020; Merckaert et al., 2021) with effects on the survival and cytoskeletal organization in cells. **This nanobody is a potent research tool as it purportedly represents one of the most specific inhibitors of Akt2 at present**.

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 Nb8 was raised by immunizing a llama with the full length human protein, obtained from insect cells.

Availability: Akt Nb8 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.