Nanobody toolbox for your research

PRODUCT SPECIFICATION

Recombinant anti-human pan Akt Nanobody 10.

Catalogue number: sdAb-pan Akt-Nb10.

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.

A *pan* Akt nanobody does not discriminate between Akt1, 2 or 3 and hence interacts with all three Akt isoforms. (Merckaert et al., 2020; Merckaert et al., 2021). Such nanobodies can be useful in studies where i.e. only a single isoform is expressed in the biological sample under study or when it is required to effectively pull down all isoforms that are expressed in the sample. *Pan*Akt2 Nb10 (described in Merckaert et al., 2020) was obtained after immunization with full length Akt2 and was subsequently found to interact with all three Akt isoforms.

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.
Availability:	Akt2 Nb10 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 Akt isoforms 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.