

PRODUCT SPECIFICATION

Recombinant Manduhai anti-human Cortactin SH3 nanobody 2.



Catalogue number: sdAb-CTT SH3-Nb2/Man

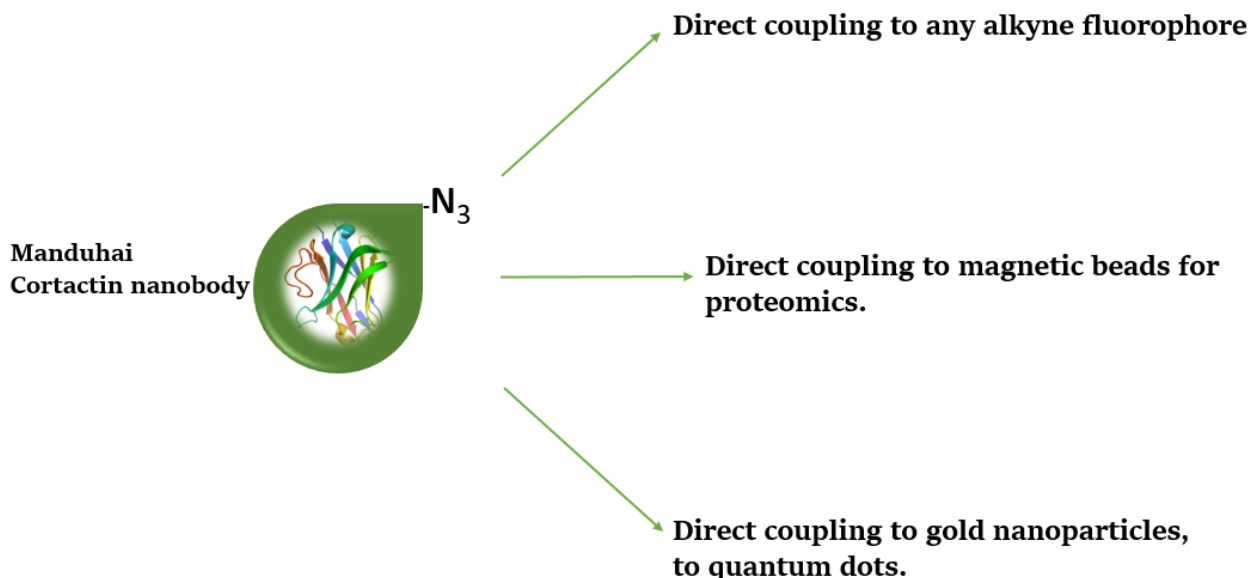
Background

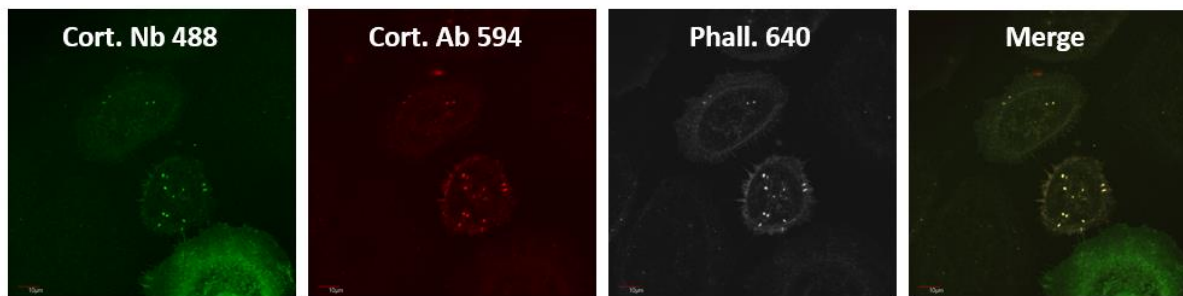
Cortactin is a multidomain cytoskeletal protein and a crucial component in cell migration (via Arp2/3) and cancer cell invasion and metastasis. Cortactin is an early constituent of podosomes (immune cells) and invadopodia (cancer cells), structures/organelles used by cells to degrade the extracellular matrix and migrate to a site of infection (immune cells) or escape from a primary tumor (cancer cells). The protein is overexpressed in various types of cancer.

Derivatized Cortactin nanobody for click chemistry

The Manduhai Cortactin SH3 nanobody 2 carries at its carboxy-terminus a *para*-azido-Phe residue, enzymatically inserted. This residue is the same as natural Phe, except that it carries an azido group in its aromatic ring (-N₃). As a result, the nanobody is endowed with a singular reactive group, allowing down stream *click chemistry*. *Reproducible and site-specific labeling becomes standard in this way*. Through this modification the antigen binding properties of the nanobody remain unchanged because the carboxy-terminal region of a nanobody is generally not involved in antigen binding.

New possibilities arise for research:





The images show HeLa cells that were *photoporated* with Manduhai Cortactin SH3 Nb-488 (green) according to Liu et al. (2020, <https://doi.org/10.1007/s12274-020-2633-z>). The cell was stained with anti-cortactin antibody 594 for comparison (red) and with phalloidin 640 (grey) for actin. The cells were coated on gelatin. Cortactin is a marker of invadopodia (tiny green/red/grey/yellow dots in two upper cells). Cancer cell invadopodia mimic to some extent immune cell podosomes, and they are involved in degrading the extracellular matrix allowing cancer cells to escape from the primary tumor and gain access to the circulation, a preliminary to secondary tumor formation (metastasis). The cortactin nanobody is also suitable for conventional staining of cells.

Source and properties

Cortactin SH3 Nb2 was raised by immunizing a dromedary with full length human His₆- and SUMO-tagged cortactin. The nanobody binds to the C-terminal SH3 domain with an **approximate affinity of 75 nM (determined by ITC)**. It does not cross-react with HS-1, a close relative of cortactin. The nanobody was shown to act as an intrabody and perturb invadosome stability. It may prevent interaction with a number of proteins known to bind to the SH3 domain, including WIP.

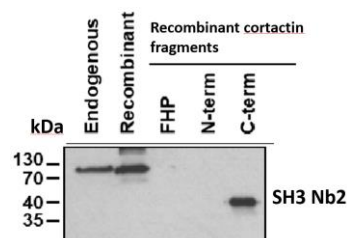
Availability: The Manduhai Cortactin SH3 nanobody 2 comes with a COOH-terminal para-Azido Phe residue. Available in 25 µg, 50 µg, 100 µg quantities. For bulk amounts, please inquire.

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

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

Storage buffer: 20 mM Tris-HCl pH 8.0, 150 mM NaCl, 1mM DTT.

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



Detection of endogenous (SCC-61 head and neck squamous cell carcinoma cells) and recombinant cortactin using V5-tagged SH3 nanobody. Bertier L, et al. *Biomed Pharmacother.* 2018;102:230-241.