

MSP2N2-D73C-His protein

Product	Catalog No.	Package size
MSP2N2-D73C-His, lyophilized protein (2 mg)	27272	2 mg
MSP2N2-D73C-His, lyophilized protein (10 mg)	27276	5 x 2 mg

Product Description

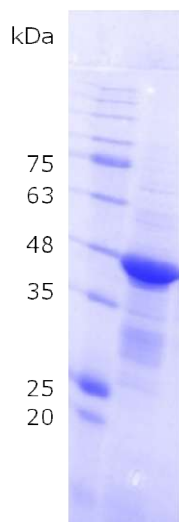
Nanodiscs were first described by Sligar and coworkers (1, 2). Nanodiscs provide a phospholipid bilayer system held together by membrane scaffold proteins (MSPs). MSPs are truncated forms of apolipoprotein (apo) A-I which wrap around a patch of a lipid bilayer to form a disc-like particle or nanodisc (3). MSPs provide a hydrophobic surface facing the lipids, and a hydrophilic surface at the outside. This setup makes nanodiscs highly soluble in aqueous solutions and allows for the solubilization of membrane proteins in the absence of detergents. These nanobilayer particles are about 7-17 nm in diameter, depending on the mutation variant of MSP used. Most widely employed are MSP1D1 and MSP1E3D1. Recently, larger membrane scaffold proteins of the MSP2 series have been generated to accommodate large membrane proteins and protein complexes (3). Most commonly used phospholipids are dimyristoyl-glycero-phosphocholine (DMPC) or palmitoyl-oleoyl-phosphatidylcholine (POPC) in combination with sodium cholate.

Cube Biotech offers MSP1D1, MSP1E3D1, MSP1D1ΔH5 and MSP2N2 his-tagged proteins, For some scaffold proteins, untagged variants are available on request. For use in cell-free expression reactions, pre-assembled nanodiscs and nanodisc assembly kits that contain the lyophilized proteins and pre-aliquoted amounts of lipids and sodium cholate are available.

The D73C mutant protein has been developed to facilitate the directed addition of biotin or other molecules via the SH group of the single cysteine residue. Ready-to-use, biotinylated MSP are available on request.

Reconstitution of MSP protein

Cube Nanodisc membrane scaffold proteins are delivered lyophilized from a solution containing 20 mM Tris pH 7.4, 100 mM NaCl, 0.5 mM EDTA. Each aliquot contains 2 mg protein. Adding 0.5 mL double distilled water will restore the original solution with a protein concentration of 4 mg/mL. This stock can be diluted further as required by the different application protocols.



Technical details

Purity: > 90% (SDS-PAGE)
 Number of amino acids: 392
 Molecular mass: 45,661 Da
 Extinction coefficient (in water) ϵ_{280} : 39,880 M⁻¹cm⁻¹

Shipping & Storage

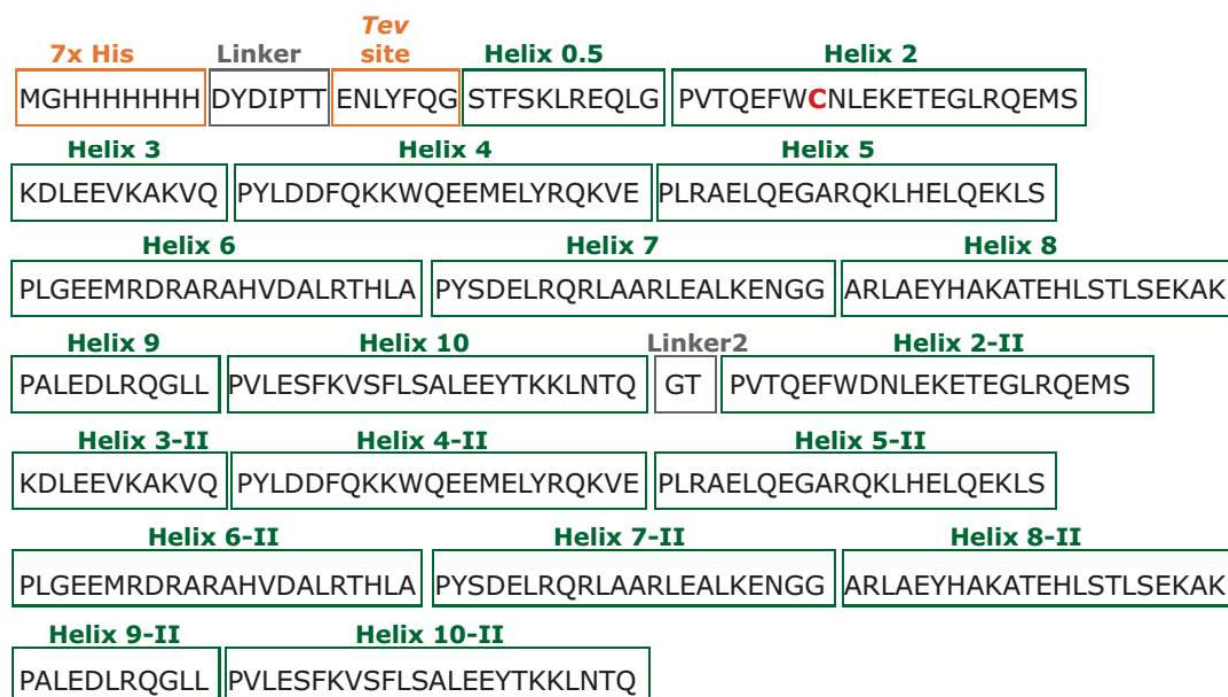
Shipment Temperature	Ambient temperature
Storage of lyophilized protein	-20°C for several months
Storage of reconstituted protein	2-8°C for several days

Protein overview and amino acid sequence

MSP2N2 - His
Membrane scaffold protein 2N2
Mutation D73C
his-tagged



Legend: H: 7xHis, L/L2: Linker / Linker 2 T: *Tev* site, H0.5-H10: Helices 0.5-10, Helices 2-10 are repeated in the MSP2N2 variant. **X:** Approximate position of D->C mutation



Additional Information

For nanodisc protocols, please visit our webpage at: www.cube-biotech.com/protocols. For background information on nanodiscs and possible applications please see <http://www.cube-biotech.com/background-tips-and-tricks/what-are-nanodiscs>. For protein affinity purification, Cube Biotech offers dedicated agarose resins, magnetic beads and prepacked cartridges. Also available are a range of ultrapure detergents and buffers for extraction and purification of proteins.

See www.cube-biotech.com/products for details.

Literature references

1. Bayburt, T.H. et al. Reconstitution and imaging of a membrane protein in a nanometer-size phospholipid bilayer. *J. Struct. Biol.* (1998), 123(1):37-44
2. Civjan, N.R. et al. Direct solubilization of heterologously expressed membrane proteins by incorporation into nanoscale lipid bilayers. *BioTechniques* (2003) 35:556-563
3. Grinkova Y.V et al. Engineering extended membrane scaffold proteins for self-assembly of soluble nanoscale lipid bilayers. *Protein Engineering, Design & Selection* (2010) vol. 23 no. 11 pp. 843-848

Disclaimer: Our products are intended for molecular biology applications. These products are not intended for the diagnosis, prevention, or treatment of a disease.

Nanodiscs are protected by US Patents 7,691,414; 7,662,410; 7,622,437; 7,592,008; 7,575,763; 7,083,958; 7,048,949

Proteins are our passion.