β-dystroglycan (7D11): sc-33701

SANTA CRUZ®
BIOTECHNOLOGY

The Power to Question

BACKGROUND

Dystroglycan (DG) is a cell surface receptor for several extracellular matrix molecules including laminins, Agrin and Perlecan. Dystroglycan function is required for the formation of basement membranes in early development and the organization of laminin on the cell surface. α-dystroglycan is a membrane-associated, extracellular glycoprotein that is anchored to the cell-membrane by binding to the transmembrane glycoprotein β-dystroglycan to form an α/β-dystroglycan-complex. Additionally, dystroglycan is part of a multimolecular complex, where it associates with dystrophin, at the sarcolemma, to form the dystrophin-associated protein complex or with utrophin, at the neuromuscular junction, to form the utrophin-associated protein complex. dystroglycan is also thought to participate in the clustering of nicotinic acetylcholine receptors at the neuromuscular junction.

CHROMOSOMAL LOCATION

Genetic locus: DAG1 (human) mapping to 3p21.31; Dag1 (mouse) mapping to 9 F2.

SOURCE

β-dystroglycan (7D11) is a mouse monoclonal antibody raised against the C-terminus of β-dystroglycan of human origin.

PRODUCT

Each vial contains 200 µg IgG$_1$ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

β-dystroglycan (7D11) is available conjugated to agarose (sc-33701 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-33701 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-33701 PE), fluorescein (sc-33701 FITC), Alexa Fluor® 488 (sc-33701 AF488), Alexa Fluor® 546 (sc-33701 AF546), Alexa Fluor® 594 (sc-33701 AF594) or Alexa Fluor® 647 (sc-33701 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-33701 AF680) or Alexa Fluor® 790 (sc-33701 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

β-dystroglycan (7D11) is recommended for detection of β-dystroglycan of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for α/β-dystroglycan siRNA (h): sc-43488, α/β-dystroglycan siRNA (m): sc-43489, α/β-dystroglycan shRNA Plasmid (h): sc-43488-SH, α/β-dystroglycan shRNA Plasmid (m): sc-43489-SH, α/β-dystroglycan shRNA (h) Lentiviral Particles: sc-43488-V and α/β-dystroglycan shRNA (m) Lentiviral Particles: sc-43489-V.
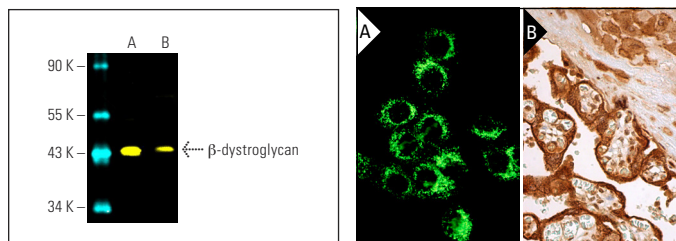
Molecular Weight of β-dystroglycan precursor: 97 kDa.

Molecular Weight of mature β-dystroglycan: 43 kDa.

Positive Controls: MCF7 whole cell lysate: sc-2206, L6 whole cell lysate: sc-364196 or C6 whole cell lysate: sc-364373.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA

β-dystroglycan (7D11) Alexa Fluor® 488: sc-33701 AF488. Direct fluorescent western blot analysis of β-dystroglycan expression in C6 (**A**) and L6 (**B**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Cruz Marker™ Molecular Weight Standards detected with Cruz Marker™ MW Tag-Alexa Fluor® 647: sc-516791.

β-dystroglycan (7D11): sc-33701. Immunofluorescence staining of methanol-fixed L6 cells showing membrane localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human placenta tissue showing membrane, cytoplasmic and nuclear staining of trophoblastic cells and decidual cells (**B**).

SELECT PRODUCT CITATIONS

1. Alhamidi, M., et al. 2011. Fukutin-related protein resides in the Golgi cisternae of skeletal muscle fibres and forms disulfide-linked homodimers via an N-terminal interaction. PLoS ONE 6: e22968.

2. Gerin, I., et al. 2016. ISPD produces CDP-ribitol used by FKTN and FKRP to transfer ribitol phosphate onto α-dystroglycan. Nat. Commun. 7: 11534.

3. Rader, E.P., et al. 2017. Enhancement of skeletal muscle in aged rats following high-intensity stretch-shortening contraction training. Rejuvenation Res. 20: 93-102.

4. Vélez-Aguilera, G., et al. 2018. Control of nuclear β-dystroglycan content is crucial for the maintenance of nuclear envelope integrity and function. Biochim. Biophys. Acta 1865: 406-420.

5. Azuara-Medina, P.M., et al. 2019. The intracellular domain of β-dystroglycan mediates the nucleolar stress response by suppressing UBF transcriptional activity. Cell Death Dis. 10: 196.

6. Teramoto, N., et al. 2020. Pathological evaluation of rats carrying in-frame mutations in the dystrophin gene: a new model of Becker muscular dystrophy. Dis. Model. Mech. 13: dmm044701.

7. Ury, B., et al. 2021. The promiscuous binding pocket of SLC35A1 ensures redundant transport of CDP-ribitol to the Golgi. J. Biol. Chem. 296: 100789.

8. Sheikh, M.O., et al. 2022. Cell surface glycan engineering reveals that matriglycan alone can recapitulate dystroglycan binding and function. Nat. Commun. 13: 3617.

RESEARCH USE

For research use only, not for use in diagnostic procedures.