

Gemin3 (12H12): sc-57007

BACKGROUND

Spinal muscular atrophy (SMA) is an autosomal recessive neurodegenerative disease characterized by loss of motor neurons in the spinal cord. SMA is caused by deletion or loss-of-function mutations in the SMN (survival of motor neuron) gene. Gemin3, also known as DP103, DDX20, DEAD-box protein DP130 and DEAD/H box 20, is a protein product of human chromosome 1p13.2. It associates directly with SMN and is a part of the SMN complex containing Gemin2, Gemin4, Gemin5 and Gemin6, as well as several spliceosomal snRNP proteins. The SMN complex plays an essential role in spliceosomal snRNP assembly in the cytoplasm and is required for pre-mRNA splicing of the nucleus. It is found in both the cytoplasm and the nucleus. The nuclear form is concentrated in subnuclear bodies called gems (for Gemini of the coiled bodies). Gemin3 also interacts with SmB, SmD2 and SmD3. It contains the conserved motif Asp-Glu-Ala-Asp (DEAD) characteristic of DEAD-box proteins. Gemin3 is a putative RNA helicase and shows ATPase activity. It is expressed in B and T cell neuroblastoma-derived cell lines, malignant melanoma tumor, normal testis and is expressed in low levels in colon, skeletal muscle, liver, kidney and lung.

REFERENCES

1. Fischer, U., et al. 1997. The SMN-SIP1 complex has an essential role in spliceosomal snRNP biogenesis. *Cell* 90: 1023-1029.
2. Coovert, D., et al. 1997. The survival motor neuron protein in spinal muscular atrophy. *Hum. Mol. Genet.* 6: 1205-1214.

CHROMOSOMAL LOCATION

Genetic locus: DDX20 (human) mapping to 1p13.2; Ddx20 (mouse) mapping to 3 F2.2.

SOURCE

Gemin3 (12H12) is a mouse monoclonal antibody raised against amino acids 368-548 of Gemin3 of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Gemin3 (12H12) is available conjugated to agarose (sc-57007 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-57007 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-57007 PE), fluorescein (sc-57007 FITC), Alexa Fluor® 488 (sc-57007 AF488), Alexa Fluor® 546 (sc-57007 AF546), Alexa Fluor® 594 (sc-57007 AF594) or Alexa Fluor® 647 (sc-57007 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-57007 AF680) or Alexa Fluor® 790 (sc-57007 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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STORAGE

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

APPLICATIONS

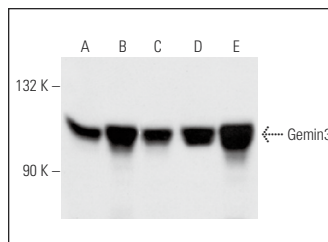
Gemin3 (12H12) is recommended for detection of Gemin3 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 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 Gemin3 siRNA (h): sc-43798, Gemin3 siRNA (m): sc-60050, Gemin3 shRNA Plasmid (h): sc-43798-SH, Gemin3 shRNA Plasmid (m): sc-60050-SH, Gemin3 shRNA (h) Lentiviral Particles: sc-43798-V and Gemin3 shRNA (m) Lentiviral Particles: sc-60050-V.

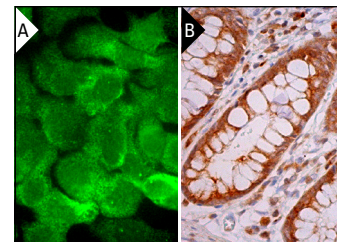
Molecular Weight of Gemin3: 103 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, CCRF-CEM nuclear extract: sc-2146 or HeLa nuclear extract: sc-2120.

DATA



Gemin3 (12H12): sc-57007. Western blot analysis of Gemin3 expression in Jurkat (A), HeLa (B) and NTERA-2 cl.D1 (C) whole cell lysates and CCRF-CEM (D) and HeLa (E) nuclear extracts.



Gemin3 (12H12): sc-57007. Immunofluorescence staining of formalin-fixed A-431 cells showing nuclear and cytoplasmic localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human rectum tissue showing nuclear and cytoplasmic staining of glandular cells (B).

SELECT PRODUCT CITATIONS

1. Battle, D.J., et al. 2007. SMN-independent subunits of the SMN complex. Identification of a small nuclear ribonucleoprotein assembly intermediate. *J. Biol. Chem.* 282: 27953-27959.
2. Tsalikis, J., et al. 2015. Intracellular bacterial pathogens trigger the formation of U small nuclear RNA bodies (U bodies) through metabolic stress induction. *J. Biol. Chem.* 290: 20904-20918.
3. Braselmann, E., et al. 2018. A multicolor riboswitch-based platform for imaging of RNA in live mammalian cells. *Nat. Chem. Biol.* 14: 964-971.
4. Ellwanger, K., et al. 2019. XIAP controls RIPK2 signaling by preventing its deposition in speck-like structures. *Life Sci. Alliance* 2: e201900346.
5. Miralles, M.P., et al. 2022. Survival motor neuron protein and neurite degeneration are regulated by Gemin3 in spinal muscular atrophy motoneurons. *Front. Cell. Neurosci.* 16: 1054270.
6. Pánek, J., et al. 2023. The SMN complex drives structural changes in human snRNAs to enable snRNP assembly. *Nat. Commun.* 14: 6580.

RESEARCH USE

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