

# Synoviolin (4H4): sc-293484

## BACKGROUND

Ubiquitination is an important mechanism through which three classes of enzymes act in concert to target short-lived or abnormal proteins for destruction. The three classes of enzymes involved in ubiquitination are the ubiquitin-activating enzymes (E1s), the ubiquitin-conjugating enzymes (E2s) and the ubiquitin-protein ligases (E3s). Synoviolin, also known as SYVN1 (synovial apoptosis inhibitor 1) or HRD1, is a 617 amino acid multi-pass membrane protein that localizes to the endoplasmic reticulum and contains one RING-type zinc finger. Expressed ubiquitously with highest expression in kidney and liver, Synoviolin exists as a homodimer that exhibits E3 ubiquitin-protein ligase activity and is a component of the ER-associated degradation (ERAD) complex, a multi-protein structure that mediates the degradation of misfolded proteins within the ER. Synoviolin is upregulated in patients with rheumatoid arthritis (RA), suggesting a role for Synoviolin in the pathogenesis of RA.

## REFERENCES

- Kikkert, M., et al. 2004. Human HRD1 is an E3 ubiquitin ligase involved in degradation of proteins from the endoplasmic reticulum. *J. Biol. Chem.* 279: 3525-3534.
- Lilley, B.N., et al. 2005. Multiprotein complexes that link dislocation, ubiquitination, and extraction of misfolded proteins from the endoplasmic reticulum membrane. *Proc. Natl. Acad. Sci. USA* 102: 14296-14301.
- Yamasaki, S., et al. 2006. Resistance to endoplasmic reticulum stress is an acquired cellular characteristic of rheumatoid synovial cells. *Int. J. Mol. Med.* 18: 113-117.
- Yamasaki, S., et al. 2007. The roles of Synoviolin in crosstalk between endoplasmic reticulum stress-induced apoptosis and p53 pathway. *Cell Cycle* 6: 1319-1323.
- Hosokawa, N., et al. 2008. Human XTP3-B forms an endoplasmic reticulum quality control scaffold with the HRD1-SEL1L ubiquitin ligase complex and BiP. *J. Biol. Chem.* 283: 20914-20924.
- Cattaneo, M., et al. 2008. SEL1L and HRD1 are involved in the degradation of unassembled secretory Ig- $\mu$  chains. *J. Cell. Physiol.* 215: 794-802.

## CHROMOSOMAL LOCATION

Genetic locus: SYVN1 (human) mapping to 11q13.1; Syvn1 (mouse) mapping to 19 A.

## SOURCE

Synoviolin (4H4) is a mouse monoclonal antibody raised against amino acids 238-318 representing partial length Synoviolin of human origin.

## PRODUCT

Each vial contains 50  $\mu$ g IgG<sub>2b</sub> kappa light chain in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## RESEARCH USE

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

## APPLICATIONS

Synoviolin (4H4) is recommended for detection of Synoviolin of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Synoviolin siRNA (h): sc-76620, Synoviolin siRNA (m): sc-76621, Synoviolin shRNA Plasmid (h): sc-76620-SH, Synoviolin shRNA Plasmid (m): sc-76621-SH, Synoviolin shRNA (h) Lentiviral Particles: sc-76620-V and Synoviolin shRNA (m) Lentiviral Particles: sc-76621-V.

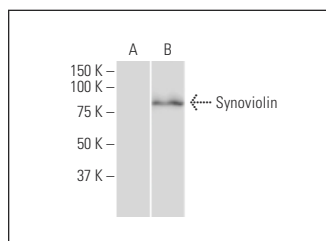
Molecular Weight of Synoviolin: 85 kDa.

Positive Controls: Synoviolin transfected 293T whole cell lysate.

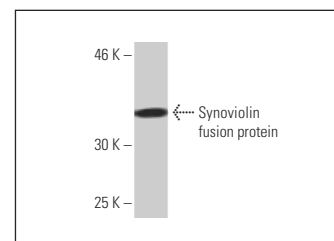
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

## DATA



Synoviolin (4H4): sc-293484. Western blot analysis of Synoviolin expression in non-transfected (A) and Synoviolin transfected (B) 293T whole cell lysates.



Synoviolin (4H4): sc-293484. Western blot analysis of human recombinant Synoviolin fusion protein.

## SELECT PRODUCT CITATIONS

- Zhu, B., et al. 2017. ER-associated degradation regulates Alzheimer's amyloid pathology and memory function by modulating  $\gamma$ -secretase activity. *Nat. Commun.* 8: 1472.
- Fang, J., et al. 2018. Melatonin prevents senescence of canine adipose-derived mesenchymal stem cells through activating NRF2 and inhibiting ER stress. *Aging* 10: 2954-2972.
- Jin, Y., et al. 2020. The role of Hrd1 in ultraviolet (UV) radiation induced photoaging. *Aging* 12: 21273-21289.

## STORAGE

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