

# Calpain 1 (A-5): sc-390677

## BACKGROUND

Calpain 1, also designated  $\mu$ -Calpain, is an intracellular calcium-dependent protease that cleaves cytoskeletal and submembranous proteins. Calpains are nonlysosomal, calcium-activated intracellular cysteine proteases. Calpains mediate specific  $\text{Ca}^{2+}$ -dependent processes including cell fusion, mitosis and meiosis. Calpains are heterodimers of a small regulatory subunit and one of three large catalytic subunits, designated Calpain 1, Calpain 2 and Calpain p94. Calpastatin regulates Calpain by inhibiting both the proteolytic activity of Calpain and its binding to membranes. Calpastatin exists in two types, tissue type and erythrocyte type, resulting from both alternative splicing and proteolytic processing. Calpain-1 co-localizes with human leukocyte antigen-DR (HLA-DR) on activated microglia in the aging brain. Calpain influences the process of spermatogenesis and the events preceding fertilization, such as the acrosome reaction.

## REFERENCES

- Murachi, T. 1984. Calcium-dependent proteinases and specific inhibitors: Calpain and Calpastatin. *Biochem. Soc. Symp.* 45: 149-167.
- Takano, E., et al. 1991. Molecular diversity of erythrocyte Calpastatin. *Biomed. Biochim. Acta* 50: 517-521.
- Takano, E., et al. 1993. Molecular diversity of Calpastatin in human erythroid cells. *Arch. Biochem. Biophys.* 303: 349-354.
- Kawasaki, H. and Kawashima, S. 1996. Regulation of the Calpain-Calpastatin system by membranes. *Mol. Membr. Biol.* 13: 217-224.
- Johnson, G.V., et al. 1997. Calpains: intact and active? *Bioessays* 19: 1011-1018.

## CHROMOSOMAL LOCATION

Genetic locus: CAPN1 (human) mapping to 11q13.1; Capn1 (mouse) mapping to 19 A.

## SOURCE

Calpain 1 (A-5) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 682-709 of Calpain 1 of human origin.

## PRODUCT

Each vial contains 200  $\mu\text{g}$  IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-390677 P, (100  $\mu\text{g}$  peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## STORAGE

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

## RESEARCH USE

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

## APPLICATIONS

Calpain 1 (A-5) is recommended for detection of Calpain 1 catalytic subunit of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu\text{g}$  per 100-500  $\mu\text{g}$  of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Calpain 1 (A-5) is also recommended for detection of Calpain 1 catalytic subunit in additional species, including equine, canine, bovine and porcine.

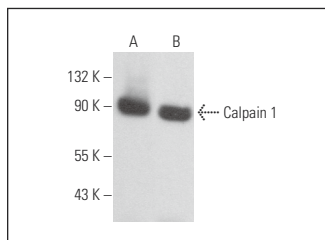
Suitable for use as control antibody for Calpain 1 siRNA (h): sc-29885, Calpain 1 siRNA (m): sc-29886, Calpain 1 siRNA (r): sc-60099, Calpain 1 shRNA Plasmid (h): sc-29885-SH, Calpain 1 shRNA Plasmid (m): sc-29886-SH, Calpain 1 shRNA Plasmid (r): sc-60099-SH, Calpain 1 shRNA (h) Lentiviral Particles: sc-29885-V, Calpain 1 shRNA (m) Lentiviral Particles: sc-29886-V and Calpain 1 shRNA (r) Lentiviral Particles: sc-60099-V.

Molecular Weight of Calpain 1 large subunit: 80 kDa.

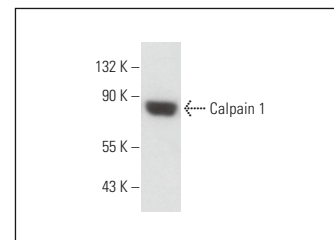
Molecular Weight of Calpain 1 small subunit: 30 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201, SCC-4 whole cell lysate: sc-364363 or TF-1 cell lysate: sc-2412.

## DATA



Calpain 1 (A-5): sc-390677. Western blot analysis of Calpain 1 expression in A-431 (A) and SCC-4 (B) whole cell lysates.



Calpain 1 (A-5): sc-390677. Western blot analysis of Calpain 1 expression in TF-1 whole cell lysate.

## SELECT PRODUCT CITATIONS

- Yan, M., et al. 2018. Uric acid induces cardiomyocyte apoptosis via activation of Calpain 1 and endoplasmic reticulum stress. *Cell. Physiol. Biochem.* 45: 2122-2135.
- Xia, M., et al. 2019. TRPA1 activation-induced myelin degradation plays a key role in motor dysfunction after intracerebral hemorrhage. *Front. Mol. Neurosci.* 12: 98.
- Gupta, V., et al. 2022. Discovery of imidazole-based GSK-3 $\beta$  inhibitors for transdifferentiation of human mesenchymal stem cells to neurons: a potential single-molecule neurotherapeutic foresight. *Front. Mol. Neurosci.* 15: 1002419.



See **Calpain 1 (D-11): sc-271313** for Calpain 1 antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.