SANTA CRUZ BIOTECHNOLOGY, INC.

PI-9 (7D8): sc-59983

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Serine proteinase inhibitors (serpins) function as regulators of Serine proteinase activity in a variety of physiological processes. Proteinase inhibitor-9 (PI-9, also designated cytoplasmic antiproteinase 3, or CAP3) is a member of the Ovalbumin family of serpins that is expressed in placenta, lung and cytotoxic lymphocytes. PI-9 is a potent inhibitor of granzyme B and of granzyme B-mediated apoptosis, and is also an inhibitor of caspase-1 and, to a lesser extent, caspase-4 and caspase-8. Because granzyme B promotes DNA degradation and rapidly translocates to the nucleus to bind to a nuclear component, PI-9 is present in the nuclei of human cytotoxic cells, endothelial cells and epithelial cells. PI-9 is exported from nuclei via a leptomycin B-sensitive pathway, suggesting that the nucleocytoplasmic distribution of PI-9 involves a nonconventional nuclear import pathway and the export factor CRM1. Estrogen rapidly and strongly induces PI-9, which is an estrogen-regulated human gene. PI-9 expression is also upregulated in response to inflammatory stimuli. This upregulation protects cells from apoptosis induced by endogenously expressed or released granzyme B, particulary during target cell killling. In addition, PI-9 is expressed in a variety of human and murine tumors.

REFERENCES

1. Dahlen, J.R., et al. 1997. Human proteinase inhibitor 9 (PI-9) is a potent inhibitor of subtilisin A. Biochem. Biophys. Res. Commun. 238: 329-333.
2. Sun, J., et al. 1997. A new family of 10 murine Ovalbumin serpins includes two homologs of proteinase inhibitor 8 and two homologs of the granzyme B inhibitor (proteinase inhibitor 9). J. Biol. Chem. 272: 15434-15441.

CHROMOSOMAL LOCATION

Genetic locus: SERPINB9 (human) mapping to 6p25.2.

SOURCE

PI-9 (7D8) is a mouse monoclonal antibody raised against recombinant PI-9 of human origin.

PRODUCT

Each vial contains 100 µg IgG_1 in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

PI-9 (7D8) is recommended for detection of PI-9 of 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 µg per 1 x 10^6 cells); non cross-reactive with mouse or porcine.

Suitable for use as control antibody for PI-9 siRNA (h): sc-40949, PI-9 shRNA Plasmid (h): sc-40949-SH and PI-9 shRNA (h) Lentiviral Particles: sc-40949-V.

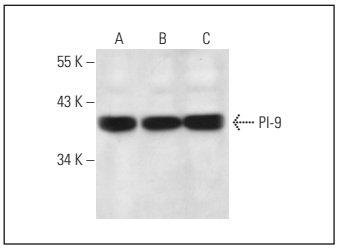
Molecular Weight of PI-9: 42 kDa.

Positive Controls: PI-9 (h3): 293T Lysate: sc-158850, Ramos cell lysate: sc-2216 or Raji whole cell lysate: sc-364236.

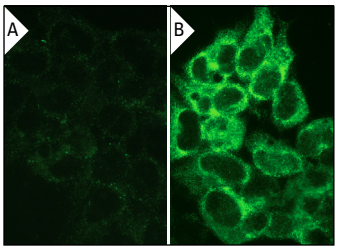
STORAGE

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

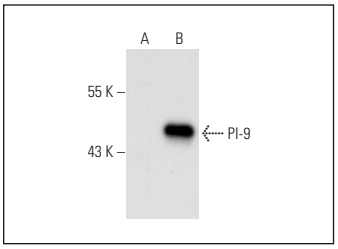
DATA



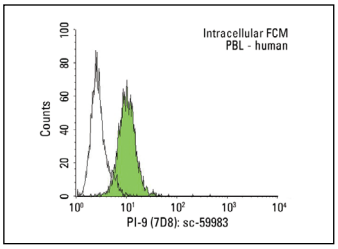
PI-9 (7D8): sc-59983. Western blot analysis of PI-9 expression in Raji (**A**), Ramos (**B**) and GA-10 (**C**) whole cell lysates.



PI-9 (7D8): sc-59983. Immunofluorescence staining of methanol-fixed untransfected (**A**) and human PI-9 transfected HEK293T cells (**B**).



PI-9 (7D8): sc-59983. Western blot analysis of PI-9 expression in non-transfected: sc-117752 (**A**) and human PI-9 transfected: sc-158850 (**B**) 293T whole cell lysates.



PI-9 (7D8): sc-59983. Indirect, intracellular FCM analysis of fixed and permeabilized human peripheral blood leukocytes stained with PI-9 (7D8), followed by FITC-conjugated goat anti-mouse IgG: sc-2010. Black line histogram represents the isotype control, normal mouse IgG_1: sc-3877.

SELECT PRODUCT CITATIONS

1. Schiffer, S., et al. 2013. Efficacy of an adapted granzyme B-based anti-CD30 cytolytic fusion protein against PI-9-positive classical Hodgkin lymphoma cells in a murine model. Blood Cancer J. 3: e106.
2. Simpson, J.L., et al. 2014. Altered sputum granzyme B and granzyme B/proteinase inhibitor-9 in patients with non-eosinophilic asthma. Respirology 19: 280-287.
3. Schiffer, S., et al. 2014. Targeted *ex vivo* reduction of CD64-positive monocytes in chronic myelomonocytic leukemia and acute myelomonocytic leukemia using human granzyme B-based cytolytic fusion proteins. Int. J. Cancer 135: 1497-1508.
4. Sula Karreci, E., et al. 2017. Human regulatory T cells undergo self-inflicted damage via granzyme pathways upon activation. JCI Insight 2: 91599.
5. Reinstein Merjava, S., et al. 2022. Presence of protease inhibitor 9 and granzyme B in healthy and pathological human corneas. Biology 11: 793.

RESEARCH USE

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