SANTA CRUZ BIOTECHNOLOGY, INC.

granzyme B (2C5): sc-8022

BACKGROUND

Granzyme A and granzyme B are serine proteases that mediate apoptotic signaling in cytotoxic T lymphocytes (CTL) and natural killer (NK) cells. Both granzyme A and granzyme B are synthesized as inactive proenzymes, and they are stored within cytolytic granules and released by effector cells during degranulation. In activated CTLs, granzyme A and granzyme B are processed and activated by cathepsin C, and they then function to induce apoptosis by two distinct pathways. Granzyme B proteolytically cleaves and activates members of the caspase family of cysteine proteases, including caspase-3, caspase-6, caspase-7 and caspase-9. When cleaved, these caspases assemble into active holoenzymes that then mediate apoptosis through a defined proteolytic cascade involving nuclear lamins and PARP (poly ADP ribose polymerase). Granzyme A mediates the activation of apoptosis by inducing single-strand DNA breaks, membrane perturbation and nuclear condensations in an alternative pathway that is independent from caspase activation or the caspase proteolytic cascade.

CHROMOSOMAL LOCATION

Genetic locus: GZMB (human) mapping to 14q12; Gzmb (mouse) mapping to 14 C3.

SOURCE

granzyme B (2C5) is a mouse monoclonal antibody raised against amino acids 1-247 representing full length granzyme B of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

granzyme B (2C5) is available conjugated to agarose (sc-8022 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-8022 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-8022 PE), fluorescein (sc-8022 FITC), Alexa Fluor® 488 (sc-8022 AF488), Alexa Fluor® 546 (sc-8022 AF546), Alexa Fluor® 594 (sc-8022 AF594) or Alexa Fluor® 647 (sc-8022 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-8022 AF680) or Alexa Fluor® 790 (sc-8022 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

granzyme B (2C5) is recommended for detection of granzyme B 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

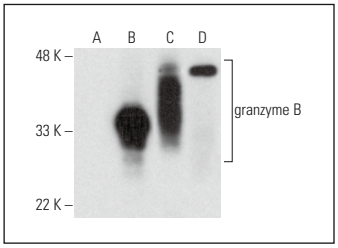
Suitable for use as control antibody for granzyme B siRNA (h): sc-35507, granzyme B siRNA (m): sc-35508, granzyme B shRNA Plasmid (h): sc-35507-SH, granzyme B shRNA Plasmid (m): sc-35508-SH, granzyme B shRNA (h) Lentiviral Particles: sc-35507-V and granzyme B shRNA (m) Lentiviral Particles: sc-35508-V.

Molecular Weight of granzyme B: 32 kDa.

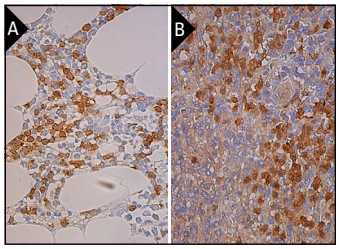
STORAGE

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

DATA



granzyme B (2C5) HRP: sc-8022 HRP. Direct western blot analysis of granzyme B expression in non-transfected 293T: sc-117752 (**A**), human granzyme B transfected 293T: sc-114114 (**B**), CTLL-2 (**C**) and human PBL (**D**) whole cell lysates.



granzyme B (2C5): sc-8022. Immunoperoxidase staining of formalin fixed, paraffin-embedded human bone marrow tissue showing cytoplasmic and membrane staining of subset of hematopoietic cells (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human spleen tissue showing cytoplasmic and membrane staining of cells in red pulp (**B**).

SELECT PRODUCT CITATIONS

1. Sun, Q., et al. 2000. B lymphoblastoid cell lines as efficient APC to elicit $CD8^+$ T cell responses against a cytomegalovirus antigen. J. Immunol. 165: 4105-4111.
2. Markovic-Lipkovski, J., et al. 2015. Variable expression of neural cell adhesion molecule isoforms in renal tissue: possible role in incipient renal fibrosis. PLoS ONE 10: e0137028.
3. Niesen, J., et al. 2016. A novel fully-human cytolytic fusion protein based on granzyme B shows *in vitro* cytotoxicity and *ex vivo* binding to solid tumors overexpressing the epidermal growth factor receptor. Cancer Lett. 374: 229-240.
4. Wagner, J., et al. 2017. A two-phase expansion protocol combining interleukin (IL)-15 and IL-21 improves natural killer cell proliferation and cytotoxicity against rhabdomyosarcoma. Front. Immunol. 8: 676.
5. Xi, G., et al. 2019. GSDMD is required for effector $CD8^+$ T cell responses to lung cancer cells. Int. Immunopharmacol. 74: 105713.
6. Zhang, C., et al. 2020. Stat3 activation-induced fatty acid oxidation in $CD8^+$ T effector cells is critical for obesity-promoted breast tumor growth. Cell Metab. 31: 148-161.e5.
7. Vicioso, Y., et al. 2021. NFκB c-Rel is dispensable for the development but is required for the cytotoxic function of NK cells. Front. Immunol. 12: 652786.
8. Li, T., et al. 2022. The role of $CD8^+$ Granzyme B^+ T cells in the pathogenesis of Takayasu's arteritis. Clin. Rheumatol. 41: 167-176.

RESEARCH USE

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