SANTA CRUZ BIOTECHNOLOGY, INC.

cGAS (C-1): sc-515802

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The presence of foreign DNA in the cytoplasm induces an antiviral host immune response. DNA in the cytoplasm triggers the production of interferons by activating and synthesis of second messenger cyclic guanosine monophosphate-adenosine monophosphate (cyclic GMP-AMP, or cGAMP). cGAS (cyclic GMP-AMP synthase), also known as MB21D1 (Mab-21 domain containing 1), h-cGAS or C6orf150, is a 522 amino acid cytoplasmic nucleotidyltransferase that catalyzes the formation of cyclic GMP-AMP (cGAMP) from ATP and GTP. cGAS is suggested to have antiviral activity by acting as a key cytosolic DNA sensor. cGAS binds to cytosolic DNA, which leads to cGAMP synthesis and activation of TMEM173, thereby trigger type-I interferon production. Expressed in monocytic cell line THP1, cGAS exists as two alternatively spliced isoforms and is encoded by a gene located on human chromosome 6q13.

REFERENCES

1. Schoggins, J.W., et al. 2011. A diverse range of gene products are effectors of the type I interferon antiviral response. Nature 472: 481-485.
2. Diner, E.J., et al. 2013. The innate immune DNA sensor cGAS produces a noncanonical cyclic dinucleotide that activates human STING. Cell Rep. 3: 1355-1361.

CHROMOSOMAL LOCATION

Genetic locus: MB21D1 (human) mapping to 6q13.

SOURCE

cGAS (C-1) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 23-39 near the N-terminus of cGAS of human origin.

PRODUCT

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

STORAGE

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

APPLICATIONS

cGAS (C-1) is recommended for detection of cGAS of human origin by Western Blotting (starting dilution 1:100, 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); Not recommended for detection of cGAS of mouse and rat origin. May cross-react with an unknown protein of similar size in mouse and rat.

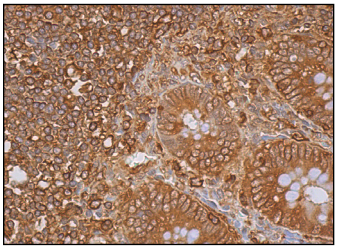
Suitable for use as control antibody for cGAS siRNA (h): sc-95512, cGAS shRNA Plasmid (h): sc-95512-SH and cGAS shRNA (h) Lentiviral Particles: sc-95512-V.

Molecular Weight of cGAS: 60 kDa.

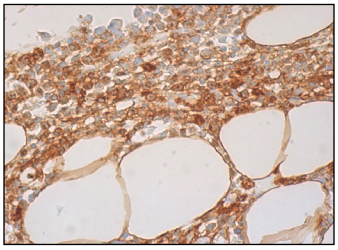
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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 L-Agarose: sc-2336 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



cGAS (C-1): sc-515802. Immunoperoxidase staining of formalin fixed, paraffin-embedded human appendix tissue showing cytoplasmic staining of glandular cells and lymphoid cells.



cGAS (C-1): sc-515802. Immunoperoxidase staining of formalin fixed, paraffin-embedded human bone marrow tissue showing cytoplasmic staining of hematopoietic cells.

SELECT PRODUCT CITATIONS

1. Xia, P., et al. 2018. The ER membrane adaptor ERAdP senses the bacterial second messenger c-di-AMP and initiates anti-bacterial immunity. Nat. Immunol. 19: 141-150.
2. Zhu, T., et al. 2021. Aspirin alleviates particulate matter induced asymptomatic orchitis of mice via suppression of cGAS-STING signaling. Front. Immunol. 12: 734546.
3. Yu, H., et al. 2022. Role of the cGAS-STING pathway in aging-related endothelial dysfunction. Aging Dis. 13: 1901-1918.
4. Friedman, B., et al. 2023. Adenosine A2A receptor activation reduces chondrocyte senescence. FASEB J. 37: e22838.
5. Jin, Z., et al. 2023. Airway epithelial cGAS inhibits LPS-induced acute lung injury through CREB signaling. Cell Death Dis. 14: 844.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.