SANTA CRUZ BIOTECHNOLOGY, INC.

Rap1GAP (D-9): sc-166586

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Rap1 GTPase activating protein (Rap1GAP) specifically stimulates GTP hydrolytic activity of the monomeric G protein Rap1. Physical interaction between $G_{\alpha\ z}$, a member of the G_i family of trimeric G proteins, and Rap1GAP blocks the ability of regulators of G protein signaling to stimulate GTP hydrolysis of the α subunit, and also attenuates the ability of activated $G_{\alpha\ z}$ to inhibit adenylyl cyclase. Rap1GAP is expressed in the brain, kidney and pancreas and may act as a signal integrator to coordinate and/or integrate G_z signaling and Rap1 signaling in cells. A novel isoform of Rapl GTPase-activating protein, designated Rap1GAPII, binds specifically to $G_{\alpha\ z}$. Stimulation of the G_i-coupled M2 Muscarinic receptor translocates Rap1GAPII from the cytosol to the membrane and decreases the amount of GTP-bound Rap1, resulting in the activation of ERK/MAPK.

REFERENCES

1. Janoueix-Lerosey, I., et al. 1994. Phosphorylation of Rap1GAP during the cell cycle. Biochem. Biophys. Res. Commun. 202: 967-975.
2. Kurachi, H., et al. 1997. Human SPA-1 gene product selectively expressed in lymphoid tissues is a specific GTPase-activating protein for Rap1 and Rap2. Segregate expression profiles from a Rap1GAP gene product. J. Biol. Chem. 272: 28081-28088.

CHROMOSOMAL LOCATION

Genetic locus: RAP1GAP (human) mapping to 1p36.12; Rap1gap (mouse) mapping to 4 D3.

SOURCE

Rap1GAP (D-9) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 15-50 near the N-terminus of Rap1GAP 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.

Rap1GAP (D-9) is available conjugated to agarose (sc-166586 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-166586 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166586 PE), fluorescein (sc-166586 FITC), Alexa Fluor® 488 (sc-166586 AF488), Alexa Fluor® 546 (sc-166586 AF546), Alexa Fluor® 594 (sc-166586 AF594) or Alexa Fluor® 647 (sc-166586 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166586 AF680) or Alexa Fluor® 790 (sc-166586 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-166586 P, (100 µg 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.

APPLICATIONS

Rap1GAP (D-9) is recommended for detection of Rap1GAP of mouse, rat and 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).

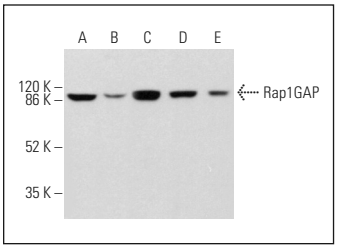
Rap1GAP (D-9) is also recommended for detection of Rap1GAP in additional species, including canine and bovine.

Suitable for use as control antibody for Rap1GAP siRNA (h): sc-36388, Rap1GAP siRNA (m): sc-155959, Rap1GAP siRNA (r): sc-270196, Rap1GAP shRNA Plasmid (h): sc-36388-SH, Rap1GAP shRNA Plasmid (m): sc-155959-SH, Rap1GAP shRNA Plasmid (r): sc-270196-SH, Rap1GAP shRNA (h) Lentiviral Particles: sc-36388-V, Rap1GAP shRNA (m) Lentiviral Particles: sc-155959-V and Rap1GAP shRNA (r) Lentiviral Particles: sc-270196-V.

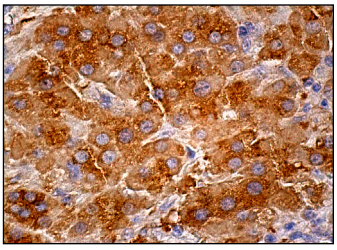
Molecular Weight of Rap1GAP: 89 kDa.

Positive Controls: SK-N-SH cell lysate: sc-2410, Jurkat whole cell lysate: sc-2204 or K-562 whole cell lysate: sc-2203.

DATA



Rap1GAP (D-9): sc-166586. Western blot analysis of Rap1GAP expression in K-562 (**A**), SK-N-SH (**B**), Jurkat (**C**), HeLa (**D**) and A549 (**E**) whole cell lysates. Detection reagent used: m-IgGκ BP-HRP: sc-516102.



Rap1GAP (D-9): sc-166586. Immunoperoxidase staining of formalin fixed, paraffin-embedded human adrenal gland tissue showing cytoplasmic staining of glandular cells.

SELECT PRODUCT CITATIONS

1. Zhou, B., et al. 2017. Mitochondrial activity and oxidative stress functions are influenced by the activation of AhR-induced CYP1A1 overexpression in cardiomyocytes. Mol. Med. Rep. 16: 174-180.
2. Gao, W.L., et al. 2018. The downregulation of Rap1 GTPase-activating protein is associated with a poor prognosis in colorectal cancer and may impact on tumor progression. Oncol. Lett. 15: 7661-7668.
3. Wu, J., et al. 2019. Novel compound cedrelone inhibits hepatocellular carcinoma progression via PBLD and Ras/Rap1. Exp. Ther. Med. 18: 4209-4220.
4. Hoy, J.J., et al. 2020. Protein kinase A inhibitor proteins (PKIs) divert GPCR-$G_{\alpha\ s}$-cAMP signaling toward EPAC and ERK activation and are involved in tumor growth. FASEB J. E-published.

RESEARCH USE

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