SANTA CRUZ BIOTECHNOLOGY, INC.

MULK (F-5): sc-514235

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

MULK (multi-substrate lipid kinase), also known as AGK (acylglycerol kinase), is a 422 amino acid protein that localizes to the mitochondrial membrane and is highly expressed in muscle, heart, kidney and brain. Containing one DAGKc domain, MULK acts as a lipid kinase that phosphorylates monoacylglycerol and diacylglycerol to form lysophosphatidic acid (LPA) and phosphatidic acid (PA), respectively. When overexpressed, MULK increases the production and secretion of LPA, thereby transactivating EGFR and ERK signaling pathways, which in turn lead to increased cell growth. Due to its involvement of LPA overproduction, MULK is implicated in the initiation and progression of prostate cancer. MULK utilizes magnesium as a cofactor and exists as two alternatively spliced isoforms. MULK is encoded by a gene mapping to 7q34.

REFERENCES

1. Waggoner, D.W., et al. 2004. MULK, a eukaryotic multi-substrate lipid kinase. J. Biol. Chem. 279: 38228-38235.
2. Spiegel, S., et al. 2005. Critical role of acylglycerol kinase in epidermal growth factor-induced mitogenesis of prostate cancer cells. Biochem. Soc. Trans. 33: 1362-1365.
3. Bektas, M., et al. 2005. A novel acylglycerol kinase that produces lysophosphatidic acid modulates cross talk with EGFR in prostate cancer cells. J. Cell Biol. 169: 801-811.
4. Epand, R.M., et al. 2007. Substrate chirality and specificity of diacylglycerol kinases and the multisubstrate lipid kinase. Biochemistry 46: 14225-14231.
5. Kalari, S., et al. 2009. Role of acylglycerol kinase in LPA-induced IL-8 secretion and transactivation of epidermal growth factor-receptor in human bronchial epithelial cells. Am. J. Physiol. Lung Cell. Mol. Physiol. 296: L328-L336.
6. Nouh, M.A., et al. 2009. Expression of autotaxin and acylglycerol kinase in prostate cancer: association with cancer development and progression. Cancer Sci. 100: 1631-1638.
7. Zeng, Y., et al. 2009. Gene expression profiles of lysophosphatidic acid-related molecules in the prostate: relevance to prostate cancer and benign hyperplasia. Prostate 69: 283-292.

CHROMOSOMAL LOCATION

Genetic locus: AGK (human) mapping to 7q34; Agk (mouse) mapping to 6 B1.

SOURCE

MULK (F-5) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 377-398 near the C-terminus of MULK of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 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-514235 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

MULK (F-5) is recommended for detection of MULK 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for MULK siRNA (h): sc-89394, MULK siRNA (m): sc-149707, MULK shRNA Plasmid (h): sc-89394-SH, MULK shRNA Plasmid (m): sc-149707-SH, MULK shRNA (h) Lentiviral Particles: sc-89394-V and MULK shRNA (m) Lentiviral Particles: sc-149707-V.

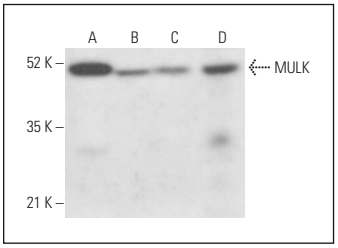
Molecular Weight of MULK: 47 kDa.

Positive Controls: MULK (h): 293T Lysate: sc-113678, MOLT-4 cell lysate: sc-2233 or HL-60 whole cell lysate: sc-2209.

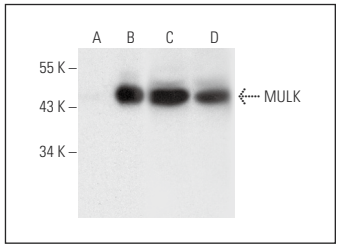
RECOMMENDED SUPPORT REAGENTS

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 A/G PLUS-Agarose: sc-2003 (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.

DATA



MULK (F-5): sc-514235. Western blot analysis of MULK expression in Raji (**A**), EOC 20 (**B**) and NIH/3T3 (**C**) whole cell lysates and rat hippocampus tissue extract (**D**).



MULK (F-5): sc-514235. Western blot analysis of MULK expression in non-transfected 293T: sc-117752 (**A**), human MULK transfected 293T: sc-113678 (**B**), MOLT-4 (**C**) and HL-60 (**D**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Hu, Z., et al. 2019. Acylglycerol kinase maintains metabolic state and immune responses of $CD8^+$ T cells. Cell Metab. 30: 290-302.

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.