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APOBEC3G Antibody

Catalog # ASC10229

Product Information

Application	WB, E, IHC-P
Primary Accession	Q9HC16
Other Accession	NP_068594, 13399304
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	46408
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	APOBEC3G antibody can be used for detection of APOBEC3G by Western blot at 5 □g/mL. Antibody can also be used for immunohistochemistry starting at 1 □g/mL.

Additional Information

Gene ID	60489
Other Names	APOBEC3G Antibody: A3G, ARCD, ARP9, ARP-9, CEM15, CEM-15, MDS019, bK150C2.7, dJ494G10.1APOBEC-related cytidine deaminase, APOBEC-related protein, apolipoprotein B mRNA editing enzyme, catalytic polypeptide-like 3G
Target/Specificity	APOBEC3G; APOBEC3G antibody will also detect the APOBEC3F isoform.
Reconstitution & Storage	APOBEC3G antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	APOBEC3G Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	APOBEC3G {ECO:0000303|PubMed:14557625, ECO:0000312|HGNC:HGNC:17357}
Function	DNA deaminase (cytidine deaminase) which acts as an inhibitor of retrovirus replication and retrotransposon mobility via deaminase- dependent and -independent mechanisms (PubMed:12808465, PubMed:16527742, PubMed:17121840, PubMed:18288108, PubMed:18849968, PubMed:19153609, PubMed:21123384, PubMed:22791714, PubMed:25542899). Exhibits potent antiviral activity against Vif-deficient HIV-1 (PubMed:12167863, PubMed:12859895, PubMed:14557625,

	PubMed:20219927, PubMed:21835787, PubMed:22807680, PubMed:22915799, PubMed:23097438, PubMed:23152537, PubMed:31397674). After the penetration of retroviral nucleocapsids into target cells of infection and the initiation of reverse transcription, it can induce the conversion of cytosine to uracil in the minus-sense single-strand viral DNA, leading to G-to-A hypermutations in the subsequent plus-strand viral DNA (PubMed:12808465, PubMed:12808466, PubMed:12809610, PubMed:12970355, PubMed:14528300, PubMed:22807680). The resultant detrimental levels of mutations in the proviral genome, along with a deamination-independent mechanism that works prior to the proviral integration, together exert efficient antiretroviral effects in infected target cells (PubMed:12808465, PubMed:12808466, PubMed:12809610, PubMed:12970355, PubMed:14528300). Selectively targets single-stranded DNA and does not deaminate double-stranded DNA or single- or double-stranded RNA (PubMed:12808465, PubMed:12809610, PubMed:12970355, PubMed:14528300). Exhibits antiviral activity also against simian immunodeficiency viruses (SIVs), hepatitis B virus (HBV), equine infectious anemia virus (EIAV), xenotropic MuLV-related virus (XMRV) and simian foamy virus (SFV) (PubMed:15031497, PubMed:16378963, PubMed:18448976, PubMed:19458006, PubMed:20335265). May inhibit the mobility of LTR and non-LTR retrotransposons (PubMed:16527742).
Cellular Location	Cytoplasm. Nucleus Cytoplasm, P-body. Note=Mainly cytoplasmic (PubMed:16527742, PubMed:16699599, PubMed:21835787). Small amount are found in the nucleus (PubMed:18667511). During HIV-1 infection, virion-encapsidated in absence of HIV-1 Vif (PubMed:12859895)
Tissue Location	Expressed in spleen, testes, ovary and peripheral blood leukocytes and CD4+ lymphocytes. Also expressed in non-permissive peripheral blood mononuclear cells, and several tumor cell lines; no expression detected in permissive lymphoid and non-lymphoid cell lines Exists only in the LMM form in peripheral blood-derived resting CD4 T- cells and monocytes, both of which are refractory to HIV-1 infection LMM is converted to a HMM complex when resting CD4 T-cells are activated or when monocytes are induced to differentiate into macrophages. This change correlates with increased susceptibility of these cells to HIV-1 infection.

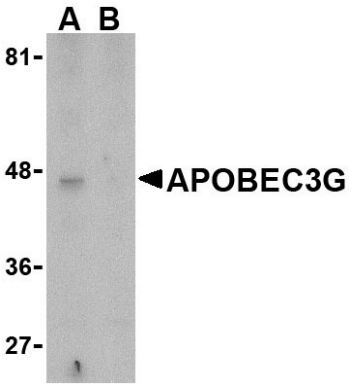
Background

APOBEC3G Antibody: The Apoliprotein B mRNA-editing, enzyme-catalytic, polypeptide-like (APOBEC) 3 is a multi-isoform member of the cytidine deaminase family of enzymes that act on monomeric nucleoside and nucleotide substrates. Similar to TRIM5α which targets incoming retroviral capsids, APOBEC3 plays a major role in cellular defense against retroviral infection as at least two isoforms, APOBEC3G and to a lesser extent APOBEC3F, can be incorporated HIV-1 virions and induce hypermutation in the newly synthesized viral DNA and thus destabilize the viral genome. This innate mechanism of retroviral resistance is counteracted by the HIV-1 Vif protein by inducing the ubiquitization and degradation of APOBEC3G; a single amino acid substitution (D128K) blocks APOBEC3G depletion without affecting its inhibitory activity.

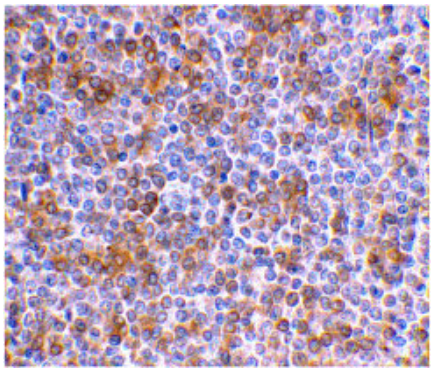
References

Jarmuz A, Chester A, Bayliss J, et al. An anthropoid-specific locus of Orphan C to U RNA-editing enzymes on chromosome 22. Genomics 2002; 79:285-96.
Stremlau M, Owens CM, Perron MJ, et al. The cytoplasmic body component TRIM5a restricts HIV-1 infection in Old World monkeys. Nature 2004; 427:848-53.
Bieniasz PD. Intrinsic immunity: a front-line defense against viral attack. Nat Immunol. 2004; 5:1109-15.
Sheehy AM, Gaddis NC, Choi JD, et al. Isolation of a human gene that inhibits HIV-1 infection and is suppressed by the viral Vif protein. Nature 2002; 418:646-50.

Images



Western blot analysis of APOBEC3G expression in Caco-2 cell lysate in the (A), absence and (B) presence of blocking peptide with APOBEC3G antibody at 5 µg/mL.



Immunohistochemical staining of human spleen using APOBEC3G antibody at 1 µg/mL.