10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

KD-Validated Anti-Three Prime Repair Exonuclease 1 Rabbit Monoclonal Antibody

Rabbit monoclonal antibody
Catalog # AGI1746

Product Information

Application	WB, FC, ICC
Primary Accession	Q9NSU2
Reactivity	Human
Clonality	Monoclonal
Isotype	Rabbit IgG
Clone Names	24GB2440
Calculated MW	33212
Gene Name	TREX1
Aliases	TREX1; Three Prime Repair Exonuclease 1; DRN3; Three-Prime Repair Exonuclease 1; 3'-5' Exonuclease TREX1; Deoxyribonuclease III; DNase III; AGS1; Aicardi-Goutieres Syndrome 1; 3' Repair Exonuclease 1; EC 3.1.11.2; HERNS; RVCLS; CRV
Immunogen	A synthesized peptide derived from human TREX1

Additional Information

Gene ID	11277
Other Names	Three-prime repair exonuclease 1, 3.1.11.2, 3'-5' exonuclease TREX1, Deoxyribonuclease III, DNase III, TREX1 {ECO:0000303|PubMed:10391904, ECO:0000312|HGNC:HGNC:12269}

Protein Information

Name	TREX1 {ECO:0000303|PubMed:10391904, ECO:0000312|HGNC:HGNC:12269}
Function	Major cellular 3'-to-5' DNA exonuclease which digests single- stranded DNA (ssDNA) and double-stranded DNA (dsDNA) with mismatched 3' termini (PubMed:10391904, PubMed:10393201, PubMed:17293595). Prevents cell-intrinsic initiation of autoimmunity (PubMed:10391904, PubMed:10393201, PubMed:17293595). Acts by metabolizing DNA fragments from endogenous retroelements, including L1, LTR and SINE elements (PubMed:10391904, PubMed:10393201, PubMed:17293595). Plays a key role in degradation of DNA fragments at cytosolic micronuclei arising from genome instability: its association with the endoplasmic reticulum membrane directs TREX1 to ruptured micronuclei, leading to micronuclear DNA degradation (PubMed:33476576). Micronuclear DNA degradation is required to limit CGAS activation and subsequent inflammation (PubMed:33476576). Unless degraded, these DNA fragments accumulate in the cytosol and activate the cGAS-STING innate immune signaling, leading to the production of type I

	interferon (PubMed:33476576). Prevents chronic ATM-dependent checkpoint activation, by processing ssDNA polynucleotide species arising from the processing of aberrant DNA replication intermediates (PubMed:18045533). Inefficiently degrades oxidized DNA, such as that generated upon antimicrobial reactive oxygen production or upon absorption of UV light (PubMed:23993650). During GZMA-mediated cell death, contributes to DNA damage in concert with NME1 (PubMed:16818237). NME1 nicks one strand of DNA and TREX1 removes bases from the free 3' end to enhance DNA damage and prevent DNA end reannealing and rapid repair (PubMed:16818237).
Cellular Location	Nucleus. Cytoplasm, cytosol. Endoplasmic reticulum membrane; Peripheral membrane protein. Note=Retained in the cytoplasm through the C-terminal region (By similarity). Localization to the endoplasmic reticulum membrane is required to direct TREX1 to ruptured micronuclei (PubMed:33476576). In response to DNA damage, translocates to the nucleus where it is specifically recruited to replication foci (PubMed:16818237). Translocation to the nucleus also occurs during GZMA-mediated cell death (PubMed:16818237) {ECO:0000250|UniProtKB:Q91XB0, ECO:0000269|PubMed:16818237, ECO:0000269|PubMed:33476576}
Tissue Location	Detected in thymus, spleen, liver, brain, heart, small intestine and colon.