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phospho-TERT (Ser1125) Rabbit pAb

Catalog # AP97104

Product Information

Application	WB
Primary Accession	O14746
Other Accession	O14746
Reactivity	Human, Mouse
Predicted	Rat
Host	Rabbit
Clonality	Polyclonal
Calculated MW	126997
Physical State	Liquid
Immunogen	KLH conjugated Synthesised phosphopeptide derived from human TERT around the phosphorylation site of Ser1125
Epitope Specificity	LP(p-S)DF
Isotype	IgG
Purity	affinity purified by Protein A
Buffer	0.01M TBS (pH7.4) with 1% BSA, 0.02% Proclin300 and 50% Glycerol.
SIMILARITY	Belongs to the reverse transcriptase family. Telomerase subfamily. Contains 1 reverse transcriptase domain.
SUBUNIT	Homodimer; dimerization is required to produce a functional complex. Oligomer; can form oligomers in the absence of the telomerase RNA template component (TERC). Catalytic subunit of the telomerase holoenzyme complex composed minimally of TERT and TERC. The telomerase complex is composed of TERT, DKC1, WDR79/TCAB1, NOP10, NHP2, GAR1, TEP1, EST1A, POT1 and a telomerase RNA template component (TERC). The molecular chaperone HSP90/P23 complex is required for correct assembly and stabilization of the active telomerase. Interacts directly with HSP90A and PTGES3. Interacts with HSPA1A; the interaction occurs in the absence of TERC and dissociates once the complex has formed. Interacts with RAN; the interaction promotes nuclear export of TERT. Interacts with XPO1. Interacts with PTPN11; the interaction retains TERT in the nucleus. Interacts with NCL (via RRM1 and C-terminal RRM4/Arg/Gly-rich domains); the interaction is important for nucleolar localization of TERT. Interacts with SMARCA4 (via the bromodomain); the interaction regulates Wnt-mediated signaling. Interacts with MCRS1 (isoform MCRS2); the interaction inhibits in vitro telomerase activity. Interacts with PIF1; the interaction has no effect on the elongation activity of TERT. Interacts with PML; the interaction recruits TERT to PML bodies and inhibits telomerase activity.
Post-translational modifications	Ubiquitinated, leading to proteasomal degradation. Phosphorylation at Tyr-707 under oxidative stress leads to translocation of TERT to the cytoplasm and reduces its antiapoptotic activity. Dephosphorylated by SHP2/PTPN11 leading to nuclear retention. Phosphorylation by the AKT pathway promotes nuclear location.
DISEASE	Note=Activation of telomerase has been implicated in cell immortalization and cancer cell pathogenesis. Defects in TERT are associated with susceptibilty to aplastic anemia (AA) [MIM:609135]. AA is a rare disease in which the reduction of the circulating blood cells results from damage to the stem cell

pool in bone marrow. In most patients, the stem cell lesion is caused by an autoimmune attack. T-lymphocytes, activated by an endogenous or exogenous, and most often unknown antigenic stimulus, secrete cytokines, including IFN-gamma, which would in turn be able to suppress hematopoiesis. Note=Genetic variations in TERT are associated with coronary artery disease (CAD). Defects in TERT are the cause of dyskeratosis congenital autosomal dominant type 2 (DKCA2) [MIM:613989]. A rare multisystem disorder caused by defective telomere maintenance. It is characterized by progressive bone marrow failure, and the clinical triad of reticulated skin hyperpigmentation, nail dystrophy, and mucosal leukoplakia. Common but variable features include premature graying, aplastic anemia, low platelets, osteoporosis, pulmonary fibrosis, and liver fibrosis among others. Early mortality is often associated with bone marrow failure, infections, fatal pulmonary complications, or malignancy. Defects in TERT are the cause of dyskeratosis congenital autosomal recessive type 4 (DKCB4) [MIM:613989]. A rare multisystem disorder caused by defective telomere maintenance. It is characterized by progressive bone marrow failure, and the clinical triad of reticulated skin hyperpigmentation, nail dystrophy, and mucosal leukoplakia. Common but variable features include premature graying, aplastic anemia, low platelets, osteoporosis, pulmonary fibrosis, and liver fibrosis among others. Early mortality is often associated with bone marrow failure, infections, fatal pulmonary complications, or malignancy. Defects in TERT are a cause of susceptibility to pulmonary fibrosis idiopathic (IPF) [MIM:178500]. Pulmonary fibrosis is a lung disease characterized by shortness of breath, radiographically evident diffuse pulmonary infiltrates, and varying degrees of inflammation and fibrosis on biopsy. It results in acute lung injury with subsequent scarring and endstage lung disease.

Important Note This product as supplied is intended for research use only, not for use in human, therapeutic or diagnostic applications.

Background Descriptions Telomerase is a ribonucleoprotein polymerase that maintains telomere ends by addition of the telomere repeat TTAGGG. The enzyme consists of a protein component with reverse transcriptase activity, encoded by this gene, and an RNA component which serves as a template for the telomere repeat. Telomerase expression plays a role in cellular senescence, as it is normally repressed in postnatal somatic cells resulting in progressive shortening of telomeres. Deregulation of telomerase expression in somatic cells may be involved in oncogenesis. Studies in mouse suggest that telomerase also participates in chromosomal repair, since de novo synthesis of telomere repeats may occur at double-stranded breaks. Alternatively spliced variants encoding different isoforms of telomerase reverse transcriptase have been identified; the full-length sequence of some variants has not been determined. Alternative splicing at this locus is thought to be one mechanism of regulation of telomerase activity. [provided by RefSeq, Jul 2008].

Additional Information

Gene ID 7015

Other Names CMM9; DKCA2; DKCB4; EST2; PFBMFT1; TCS1; TP2; TRT; hEST2; hTRT; TR; TERT_HUMAN; TERT; Telomerase catalytic subunit; Telomerase-associated protein 2 (TP2); 2.7.7.49; TERT_MOUSE; TERT_RAT; telomerase reverse transcriptase; TERT (phospho-S1125); p-TERT; phospho-TERT; TERT (phospho-Ser1125)

Dilution WB=1:500-2000,Flow-Cyt=0.2 □g/Test

Storage Store at -20 °C for one year. Avoid repeated freeze/thaw cycles. When reconstituted in sterile pH 7.4 0.01M PBS or diluent of antibody the antibody

is stable for at least two weeks at 2-4 °C.

Protein Information

Name	TERT
Synonyms	EST2, TCS1, TRT
Function	Telomerase is a ribonucleoprotein enzyme essential for the replication of chromosome termini in most eukaryotes. Active in progenitor and cancer cells. Inactive, or very low activity, in normal somatic cells. Catalytic component of the teleromerase holoenzyme complex whose main activity is the elongation of telomeres by acting as a reverse transcriptase that adds simple sequence repeats to chromosome ends by copying a template sequence within the RNA component of the enzyme. Catalyzes the RNA-dependent extension of 3'-chromosomal termini with the 6-nucleotide telomeric repeat unit, 5'-TTAGGG-3'. The catalytic cycle involves primer binding, primer extension and release of product once the template boundary has been reached or nascent product translocation followed by further extension. More active on substrates containing 2 or 3 telomeric repeats. Telomerase activity is regulated by a number of factors including telomerase complex- associated proteins, chaperones and polypeptide modifiers. Modulates Wnt signaling. Plays important roles in aging and antiapoptosis.
Cellular Location	Nucleus, nucleolus. Nucleus, nucleoplasm. Nucleus. Chromosome, telomere. Cytoplasm Nucleus, PML body. Note=Shuttling between nuclear and cytoplasm depends on cell cycle, phosphorylation states, transformation and DNA damage Diffuse localization in the nucleoplasm. Enriched in nucleoli of certain cell types. Translocated to the cytoplasm via nuclear pores in a CRM1/RAN-dependent manner involving oxidative stress-mediated phosphorylation at Tyr-707. Dephosphorylation at this site by SHP2 retains TERT in the nucleus. Translocated to the nucleus by phosphorylation by AKT
Tissue Location	Expressed at a high level in thymocyte subpopulations, at an intermediate level in tonsil T-lymphocytes, and at a low to undetectable level in peripheral blood T-lymphocytes

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