SunLong Biotech Co.,LTD
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[Primary Antibody]

Rabbit Anti-TERT antibody

Catalog Number: SL1411R

FOR RESEARCH USE ONLY

[DATASHEET]

Host:	Rabbit
Isotype:	IgG
Clonality:	Polyclonal
Target:	TERT
Immunogen:	KLH conjugated synthetic peptide derived from human TERT: 601-750/1132
Purification:	affinity purified by Protein A
Concentration:	1mg/ml
Storage:	0.01M TBS (pH7.4) with 1% BSA, 0.02% Proclin300 and 50% Glycerol. Shipped at 4℃. Store at -20 °C for one year. Avoid repeated freeze/thaw cycles.
Applications:	IHC-P=1:100-500 IHC-F=1:100-500 IF=1:100-500 Flow-Cyt=1μg/Test （Paraffin sections need antigen repair） not yet tested in other applications. optimal dilutions/concentrations should be determined by the end user.
Reactivity:	Human,Mouse,Rat
Predicted MW.:	124kDa
Subcellular Location:	The nucleus cytoplasmic
Background:	Telomerase is a ribonucleoprotein enzyme essential for the replication of chromosome termini in most eukaryotes. It elongates telomeres. It is a reverse transcriptase that adds simple sequence repeats to chromosome ends by copying a template sequence within the RNA component of the enzyme. Telomerase are large DNA-protein complexes with telomerase expression being the subject of recent research due to its link to cell immortalization. Recent evidence has shown that MYC upregulates the catalytic subunit of telomerase, TERT, and that 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.

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	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]. **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. **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.

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	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. **Subcellular 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 Specificity:** 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. **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

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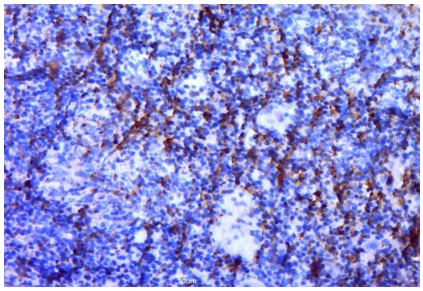
	defective telomere maintenance. It is characterized by progressive bone marrow failure, and the clinical triad of reticulated skin hyperpigmentation, nail dystrophy, and mucosal leukoplakia. Common but variable features include premature graying, aplastic anemia, low platelets, osteoporosis, pulmonary 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. **Similarity:** Belongs to the reverse transcriptase family. Telomerase subfamily. Contains 1 reverse transcriptase domain. **Database links:** **Entrez Gene:** 7015 Human **Entrez Gene:** 21752 Mouse **Entrez Gene:** 301965 Rat **SwissProt:** O14746 Human **SwissProt:** O70372 Mouse **SwissProt:** Q673L6 Rat Telomerase reverse transcriptase hTERT is one of the components of telomerase, an essential and rate-limiting component of telomerase activity; its level determines cellular telomerase activity. Inhibition of hTERT can reduce telomerase activity, thereby inhibiting tumor cell growth. Currently, research on hTERT has become a hot topic in telomerase research; it has been found that TERT protein expression is of great significance in tumor diagnosis, and hTERT antibodies and application of nuclear enzyme technology have been prepared to inhibit hTERT protein expression, suppress telomerase activity, and thereby inhibit tumor growth. Telomerase reverse transcriptase, also known as telomerase catalytic subunit

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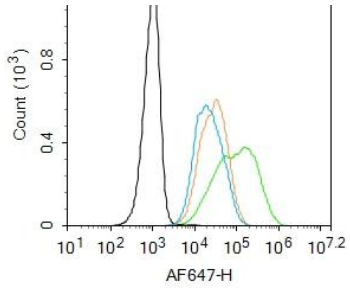
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	(hTRT; Telomerase catalytic subunit; HEST2; Telomerase-associated protein 2; TP2; Telomerase reverse transcriptase; telomerase catalytic subunit), is the major rate-limiting step in telomerase activation during cell immortalization and malignant tumorigenesis. hTRT gene expression can reflect telomerase activity and has a parallel relationship with telomerase activity.

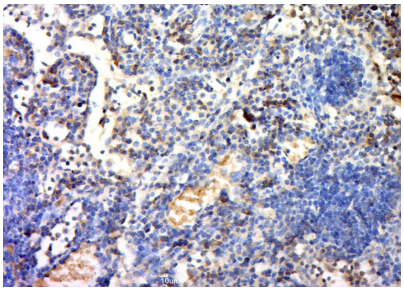
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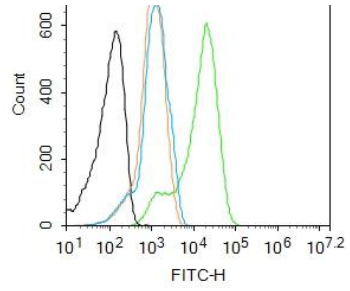
Paraformaldehyde-fixed, paraffin embedded (rat spleen tissue); Antigen retrieval by boiling in sodium citrate buffer (pH6.0) for 15min; Block endogenous peroxidase by 3% hydrogen peroxide for 20 minutes; Blocking buffer (normal goat serum) at 37°C for 30min; Antibody incubation with (TERT) Polyclonal Antibody, Unconjugated (SL1411R) at 1:400 overnight at 4°C, followed by a conjugated secondary (sp-0023) for 20 minutes and DAB staining.



Blank control:Hela.
Primary Antibody (green line): Rabbit Anti-TERT antibody (SL1411R)
Dilution: 1μg /10^6 cells;
Isotype Control Antibody (orange line): Rabbit IgG .
Secondary Antibody : Goat anti-rabbit IgG-AF647
Dilution: 1μg /test.
Protocol
The cells were fixed with 4% PFA (10min at room temperature)and then permeabilized with 90% ice-cold methanol for 20 min at-20°C.The cells were then incubated in 5%BSA to block non-specific protein-protein interactions for 30 min at room temperature .Cells stained with Primary Antibody for 30 min at room temperature. The secondary antibody used for 40 min at room temperature. Acquisition of 20,000 events was performed.



Tissue/cell: mouse lymphoid; 4% Paraformaldehyde-fixed and paraffin-embedded;
Antigen retrieval: citrate buffer (1M, pH 6.0), Boiling bathing for 15min;
Block endogenous peroxidase by 3% Hydrogen peroxide for 30min; Blocking buffer (normal goat serum,C-0005) at 37°C for 20 min;
Incubation: Anti-TERT Polyclonal Antibody, Unconjugated(SL1411R) 1:500, overnight at 4°C, followed by conjugation to the secondary antibody(SP-0023) and DAB(C-0010) staining



Blank control: K562.
Primary Antibody (green line): Rabbit Anti-TERT antibody (SL1411R)
Dilution: 1μg /10^6 cells;
Isotype Control Antibody (orange line): Rabbit IgG .
Secondary Antibody : Goat anti-rabbit IgG-FITC
Dilution: 1μg /test.
Protocol
The cells were fixed with 4% PFA (10min at room temperature)and then permeabilized with 90% ice-cold methanol for 20 min at -20°C.The cells were then incubated in 5%BSA to block non-specific protein-protein interactions for 30 min at room temperature .Cells stained with Primary Antibody for 30 min at room temperature. The secondary antibody used for 40 min at room temperature. Acquisition of 20,000 events was performed.

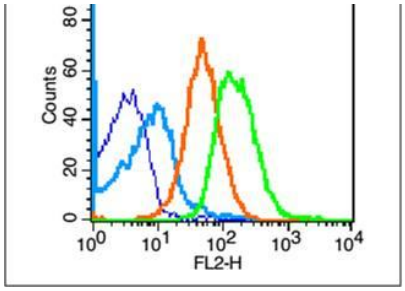
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Blank control (blue line): Mouse thymus cells (blue).
Primary Antibody (green line): Rabbit Anti-TERT antibody (SL1411R)
Dilution: 3μg /10^6 cells;
Isotype Control Antibody (orange line): Rabbit IgG .
Secondary Antibody (white blue line): Goat anti-rabbit IgG-PE
Dilution: 1μg /test.
Protocol
The cells were fixed with 70% methanol (Overnight at 4°C) and then permeabilized with 90% ice-cold methanol for 20 min at -20°C. Cells stained with Primary Antibody for 30 min at room temperature. The cells were then incubated in 1 X PBS/2%BSA/10% goat serum to block non-specific protein-protein interactions followed by the antibody for 15 min at room temperature. The secondary antibody used for 40 min at room temperature. Acquisition of 20,000 events was performed.

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