

Table S1. List of genes involved in the telomere maintenance mechanism

TMM type	Pathway	Gene name	Description
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>WRN</i>	WRN RecQ like helicase
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>AKTIP</i>	AKT Interacting Protein
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>POLD4</i>	DNA Polymerase Delta 4, Accessory Subunit
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>POLD3</i>	DNA Polymerase Delta 3, Accessory Subunit
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>POLD1</i>	DNA Polymerase Delta 1, Catalytic Subunit
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>CBX5</i>	Chromobox 5
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>HIRA</i>	Histone Cell Cycle Regulator
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>FANCD2</i>	FA Complementation Group D2
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>TIMELESS</i>	Timeless Circadian Regulator
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>TIPIN</i>	TIMELESS Interacting Protein
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>SMARCAL1</i>	SWI/SNF Related, Matrix Associated, Actin Dependent Regulator Of Chromatin, Subfamily A Like 1
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>PCNA</i>	Proliferating Cell Nuclear Antigen
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>CHEK1</i>	Checkpoint Kinase 1
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>RNASEH1</i>	Ribonuclease H1
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>MND1</i>	Meiotic Nuclear Divisions 1
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>RAD51</i>	RAD51 Recombinase
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>ATR</i>	ATR Serine/Threonine Kinase
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>RAD52</i>	RAD52 Homolog, DNA Repair Protein
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>SLX1A</i>	SLX1 Homolog A, Structure-Specific Endonuclease Subunit
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>SLX1B</i>	SLX1 Homolog B, Structure-Specific Endonuclease Subunit
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>SLX4</i>	SLX4 Structure-Specific Endonuclease Subunit
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>BLM</i>	BLM RecQ like helicase
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>RMI1</i>	RecQ Mediated Genome Instability 1
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>RMI2</i>	RecQ Mediated Genome Instability 2
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>PSMC3IP</i>	PSMC3 Interacting Protein
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>TOP3A</i>	DNA Topoisomerase III Alpha
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>POT1</i>	protection of telomeres 1
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>RPA4</i>	Replication Protein A4
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>RPA3</i>	Replication Protein A3
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>HNRNPA1</i>	Heterogeneous Nuclear Ribonucleoprotein A1
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>RPA2</i>	Replication Protein A2
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>FEN1</i>	Flap Structure-Specific Endonuclease 1
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>RPA1</i>	Replication Protein A1
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>RFC1</i>	Replication Factor C Subunit 1
Alternative Lengthening Telomere	Homologous Recombination pathway	<i>BRCA2</i>	BRCA2 DNA Repair Associated

Alternative Lengthening Telomere	Chromatin Decompaction pathway	<i>NR2C2</i>	Nuclear Receptor Subfamily 2 Group C Member 2
Alternative Lengthening Telomere	Chromatin Decompaction pathway	<i>NR2F2</i>	nuclear receptor subfamily 2 group F member 2
Alternative Lengthening Telomere	Chromatin Decompaction pathway	<i>SUV39H2</i>	Suppressor Of Variegation 3-9 Homolog 2
Alternative Lengthening Telomere	Chromatin Decompaction pathway	<i>SUV39H1</i>	Suppressor Of Variegation 3-9 Homolog 1
Alternative Lengthening Telomere	Chromatin Decompaction pathway	<i>HDAC1</i>	histone deacetylase 1
Alternative Lengthening Telomere	Chromatin Decompaction pathway	<i>HDAC2</i>	histone deacetylase 2
Alternative Lengthening Telomere	Chromatin Decompaction pathway	<i>ZNF827</i>	Zinc Finger Protein 827
Alternative Lengthening Telomere	Chromatin Decompaction pathway	<i>KMT5C</i>	Lysine Methyltransferase 5C
Alternative Lengthening Telomere	Chromatin Decompaction pathway	<i>KMT5B</i>	Lysine Methyltransferase 5B
Alternative Lengthening Telomere	Chromatin Decompaction pathway	<i>HDAC9</i>	Histone Deacetylase 9
Alternative Lengthening Telomere	PML pathway	<i>SP100</i>	SP100 Nuclear Antigen
Alternative Lengthening Telomere	PML pathway	<i>BRCA1</i>	BRCA1 DNA Repair Associated
Alternative Lengthening Telomere	PML pathway	<i>PML</i>	Promyelocytic Leukemia
Alternative Lengthening Telomere	PML pathway	<i>GEN1</i>	GEN1 Holliday Junction 5' Flap Endonuclease
Alternative Lengthening Telomere	PML pathway	<i>MUS81</i>	MUS81 Structure-Specific Endonuclease Subunit
Alternative Lengthening Telomere	PML pathway	<i>EME1</i>	Essential Meiotic Structure-Specific Endonuclease 1
Alternative Lengthening Telomere	PML pathway	<i>NBN</i>	nibrin
Alternative Lengthening Telomere	PML pathway	<i>MRE11A</i>	MRE11 homolog, double strand break repair nuclease
Alternative Lengthening Telomere	PML pathway	<i>RAD50</i>	RAD50 double strand break repair protein
Alternative Lengthening Telomere	PML pathway	<i>SMC5</i>	Structural Maintenance Of Chromosomes 5
Alternative Lengthening Telomere	PML pathway	<i>SMC6</i>	Structural Maintenance Of Chromosomes 6
Alternative Lengthening Telomere	PML pathway	<i>NSMCE2</i>	NSE2 (MMS21) Homolog, SMC5-SMC6 Complex SUMO Ligase
Alternative Lengthening Telomere	Telomere Instability	<i>ATRX</i>	ATRX Chromatin Remodeler
Alternative Lengthening Telomere	Telomere Instability	<i>DAXX</i>	Death Domain Associated Protein
Alternative Lengthening Telomere	Telomere Instability	<i>FEN1</i>	Flap Structure-Specific Endonuclease 1
Alternative Lengthening Telomere	Telomere Instability	<i>TERT</i>	telomerase reverse transcriptase
Telomerase	TERT pathway	<i>KPNA1</i>	Karyopherin Subunit Alpha 1
Telomerase	TERT pathway	<i>KPNB1</i>	Karyopherin Subunit Beta 1
Telomerase	TERT pathway	<i>IPO7</i>	Importin 7
Telomerase	TERT pathway	<i>HSPA1A</i>	Heat Shock Protein Family A (Hsp70) Member 1A
Telomerase	TERT pathway	<i>PTGES3</i>	Prostaglandin E Synthase 3
Telomerase	TERT pathway	<i>RANBP2</i>	RAN Binding Protein 2
Telomerase	TERT pathway	<i>XRN1</i>	5'-3' Exoribonuclease 1
Telomerase	TERT pathway	<i>DCP2</i>	Decapping MRNA 2
Telomerase	TERT pathway	<i>EXOSC3</i>	Exosome Component 3
Telomerase	TERT pathway	<i>DIS3</i>	DIS3 Homolog, Exosome Endoribonuclease And 3'-5' Exoribonuclease
Telomerase	TERT pathway	<i>PKC</i>	Protein Kinase C Alpha

Telomerase	TERT pathway	<i>ACD</i>	ACD shelterin complex subunit and telomerase recruitment factor
Telomerase	TERT pathway	<i>PINX1</i>	PIN2 (TERF1) Interacting Telomerase Inhibitor 1
Telomerase	TERT pathway	<i>TNKS1BP1</i>	Tankyrase 1 Binding Protein 1
Telomerase	TERT pathway	<i>TERF2IP</i>	TERF2 interacting protein
Telomerase	TERT pathway	<i>WRAP53</i>	WD Repeat Containing Antisense To TP53
Telomerase	TERT pathway	<i>HSP90AA1</i>	heat shock protein 90 alpha family class A member 1
Telomerase	TERT pathway	<i>HSP90AA2</i>	Heat Shock Protein 90 Alpha Family Class A Member 2, Pseudogene
Telomerase	TERT pathway	<i>HSP90AB1</i>	Heat Shock Protein 90 Alpha Family Class B Member 1
Telomerase	TERT pathway	<i>ATM</i>	ATM Serine/Threonine Kinase
Telomerase	TERT pathway	<i>HSP90</i>	Heat Shock Protein 90 Alpha Family Class A Member 1
Telomerase	TERT pathway	<i>ABL1</i>	ABL Proto-Oncogene 1, Non-Receptor Tyrosine Kinase
Telomerase	TERT pathway	<i>STUB1</i>	STIP1 Homology And U-Box Containing Protein 1
Telomerase	TERT pathway	<i>TERT</i>	telomerase reverse transcriptase
Telomerase	TERC_DKC1 pathway	<i>SRR1</i>	Serrate, RNA Effector Molecule
Telomerase	TERC_DKC1 pathway	<i>NCBP2</i>	Nuclear Cap Binding Protein Subunit 2
Telomerase	TERC_DKC1 pathway	<i>NCBP1</i>	Nuclear Cap Binding Protein Subunit 1
Telomerase	TERC_DKC1 pathway	<i>EXOSC10</i>	Exosome Component 10
Telomerase	TERC_DKC2 pathway	<i>ZCCHC7</i>	Zinc Finger CCHC-Type Containing 7
Telomerase	TERC_DKC1 pathway	<i>ZCCHC8</i>	Zinc Finger CCHC-Type Containing 8
Telomerase	TERC_DKC1 pathway	<i>MTR4</i>	Mtr4 Exosome RNA Helicase
Telomerase	TERC_DKC1 pathway	<i>PAPD5</i>	Terminal Nucleotidyltransferase 4B
Telomerase	TERC_DKC1 pathway	<i>PABPN1</i>	Poly(A) Binding Protein Nuclear 1
Telomerase	TERC_DKC1 pathway	<i>PARN</i>	Poly(A)-Specific Ribonuclease
Telomerase	TERC_DKC1 pathway	<i>FXR1</i>	FMR1 Autosomal Homolog 1
Telomerase	TERC_DKC1 pathway	<i>NAF1</i>	Nuclear Assembly Factor 1 Ribonucleoprotein
Telomerase	TERC_DKC1 pathway	<i>GAR1</i>	GAR1 Ribonucleoprotein
Telomerase	TERC_DKC1 pathway	<i>NOP10</i>	NOP10 Ribonucleoprotein
Telomerase	TERC_DKC1 pathway	<i>NHP2</i>	NHP2 Ribonucleoprotein
Telomerase	TERC_DKC1 pathway	<i>RUVBL1</i>	RuvB Like AAA ATPase 1
Telomerase	TERC_DKC1 pathway	<i>RUVBL2</i>	RuvB Like AAA ATPase 2
Telomerase	TERC_DKC2 pathway	<i>TERC</i>	Telomerase RNA Component
Telomerase	TERC_DKC3 pathway	<i>DKC1</i>	dyskerin pseudouridine synthase 1
