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Nucleotide

GenBank

Homo sapiens tumor protein p53 (TP53), transcript variant 1, mRNA

NCBI Reference Sequence: NM_000546.6

[FASTA](#) [Graphics](#)

Go to:

LOCUS	NM_000546	2512 bp	mRNA	linear	PRI 14-DEC-2022
DEFINITION	Homo sapiens tumor protein p53 (TP53), transcript variant 1, mRNA.				
ACCESSION	NM_000546				
VERSION	NM_000546.6				
KEYWORDS	RefSeq; MANE Select.				
SOURCE	Homo sapiens (human)				
ORGANISM	Homo sapiens Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini; Catarrhini; Hominidae; Homo.				
REFERENCE	1 (bases 1 to 2512)				
AUTHORS	Mirgayazova R, Khadiullina R, Chasov V, Mingaleeva R, Miftakhova R, Rizvanov A and Bulatov E.				
TITLE	Therapeutic Editing of the TP53 Gene: Is CRISPR/Cas9 an Option?				
JOURNAL	Genes (Basel) 11 (6), 704 (2020)				
PUBMED	32630614				
REMARK	GeneRIF: Therapeutic Editing of the TP53 Gene: Is CRISPR/Cas9 an Option? Review article Publication Status: Online-Only				
REFERENCE	2 (bases 1 to 2512)				
AUTHORS	Flynt E, Bisht K, Sridharan V, Ortiz M, Towfic F and Thakurta A.				
TITLE	Prognosis, Biology, and Targeting of TP53 Dysregulation in Multiple Myeloma				
JOURNAL	Cells 9 (2), 287 (2020)				
PUBMED	31991614				
REMARK	Review article Publication Status: Online-Only				
REFERENCE	3 (bases 1 to 2512)				
AUTHORS	Barnoud T, Parris JLD and Murphy ME.				
TITLE	Common genetic variants in the TP53 pathway and their impact on cancer				
JOURNAL	J Mol Cell Biol 11 (7), 578-585 (2019)				
PUBMED	31152665				
REMARK	GeneRIF: Common genetic variants in the TP53 pathway and their impact on cancer. Review article				
REFERENCE	4 (bases 1 to 2512)				
AUTHORS	Hu W, Chen S, Thorne RF and Wu M.				
TITLE	TP53, TP53 Target Genes (DRAM, TIGAR), and Autophagy				
JOURNAL	Adv Exp Med Biol 1206, 127-149 (2019)				
PUBMED	31776983				
REMARK	Review article				
REFERENCE	5 (bases 1 to 2512)				
AUTHORS	Baugh EH, Ke H, Levine AJ, Bonneau RA and Chan CS.				
TITLE	Why are there hotspot mutations in the TP53 gene in human cancers?				
JOURNAL	Cell Death Differ 25 (1), 154-160 (2018)				
PUBMED	29099487				
REMARK	GeneRIF: TP53 missense mutant alleles that occur in human cancers are discussed in the context of high resolution models of these p53 mutant protein structures to determine the structural features of mutations (review). Review article				
REFERENCE	6 (bases 1 to 2512)				

AUTHORS Aubrey BJ, Strasser A and Kelly GL.
 TITLE Tumor-Suppressor Functions of the TP53 Pathway
 JOURNAL Cold Spring Harb Perspect Med 6 (5), a026062 (2016)
 PUBMED [27141080](#)
 REMARK Review article
 Publication Status: Online-Only

REFERENCE 7 (bases 1 to 2512)
 AUTHORS Soussi T and Wiman KG.
 TITLE TP53: an oncogene in disguise
 JOURNAL Cell Death Differ 22 (8), 1239-1249 (2015)
 PUBMED [26024390](#)
 REMARK Review article

REFERENCE 8 (bases 1 to 2512)
 AUTHORS Soussi,T.
 TITLE The TP53 gene network in a postgenomic era
 JOURNAL Hum Mutat 35 (6), 641-642 (2014)
 PUBMED [24753184](#)
 REMARK GeneRIF: Recommendations and guidelines for reporting and annotating TP53 variants are also provided, to help researchers generate standardized data that are easy to understand, analyze, and exchange across various cancer variant databases
 Review article

REFERENCE 9 (bases 1 to 2512)
 AUTHORS Anczukow O, Ware MD, Buisson M, Zetoune AB, Stoppa-Lyonnet D, Sinilnikova OM and Mazoyer S.
 TITLE Does the nonsense-mediated mRNA decay mechanism prevent the synthesis of truncated BRCA1, CHK2, and p53 proteins?
 JOURNAL Hum Mutat 29 (1), 65-73 (2008)
 PUBMED [17694537](#)
 REMARK GeneRIF: the p53 protein encoded by the 770delT allele is as abundant as the wild-type protein, as removal of the C-terminal p53 domain leads to a stabilized mutant protein, whose abundance is markedly increased when NMD is inhibited.

REFERENCE 10 (bases 1 to 2512)
 AUTHORS Bourdon JC.
 TITLE p53 Family isoforms
 JOURNAL Curr Pharm Biotechnol 8 (6), 332-336 (2007)
 PUBMED [18289041](#)
 REMARK Review article

REFERENCE 11 (bases 1 to 2512)
 AUTHORS Candeias MM, Powell DJ, Roubalova E, Apcher S, Bourougaa K, Vojtesek B, Bruzzoni-Giovanelli H and Fahraeus R.
 TITLE Expression of p53 and p53/47 are controlled by alternative mechanisms of messenger RNA translation initiation
 JOURNAL Oncogene 25 (52), 6936-6947 (2006)
 PUBMED [16983332](#)
 REMARK GeneRIF: harbouring alternative translation initiation sites, the p53 mRNA gives rise to different levels of the p53 isoforms which help to orchestrate the cell biological outcome of p53 activation

REFERENCE 12 (bases 1 to 2512)
 AUTHORS Murray-Zmijewski F, Lane DP and Bourdon JC.
 TITLE p53/p63/p73 isoforms: an orchestra of isoforms to harmonise cell differentiation and response to stress
 JOURNAL Cell Death Differ 13 (6), 962-972 (2006)
 PUBMED [16601753](#)
 REMARK Review article

REFERENCE 13 (bases 1 to 2512)
 AUTHORS Bourdon JC, Fernandes K, Murray-Zmijewski F, Liu G, Diot A, Xirodimas DP, Saville MK and Lane DP.
 TITLE p53 isoforms can regulate p53 transcriptional activity
 JOURNAL Genes Dev 19 (18), 2122-2137 (2005)
 PUBMED [16131611](#)
 REMARK GeneRIF: p53 isoforms can regulate p53 transcriptional activity.

REFERENCE 14 (bases 1 to 2512)
 AUTHORS Ghosh A, Stewart D and Matlashewski G.
 TITLE Regulation of human p53 activity and cell localization by alternative splicing
 JOURNAL Mol Cell Biol 24 (18), 7987-7997 (2004)
 PUBMED [15340061](#)
 REMARK GeneRIF: mechanism of p53 regulation originating through alternative splicing of the human p53 gene resulting in the expression of a novel p53 mRNA

REFERENCE 15 (bases 1 to 2512)
 AUTHORS Flaman JM, Waridel F, Estreicher A, Vannier A, Limacher JM, Gilbert D, Iggo R and Frebourg T.
 TITLE The human tumour suppressor gene p53 is alternatively spliced in

normal cells

JOURNAL Oncogene 12 (4), 813-818 (1996)

PUBMED [8632903](#)

REFERENCE 16 (bases 1 to 2512)

AUTHORS Schneider,K., Zelle,K., Nichols,K.E. and Garber,J.

TITLE Li-Fraumeni Syndrome

JOURNAL (in) Adam MP, Everman DB, Mirzaa GM, Pagon RA, Wallace SE, Bean LJH, Gripp KW and Amemiya A (Eds.);

GENEREVIEWS(R);

(1993)

PUBMED [20301488](#)

REFERENCE 17 (bases 1 to 2512)

AUTHORS Turner,J.T., Brzezinski,J. and Dome,J.S.

TITLE Wilms Tumor Predisposition

JOURNAL (in) Adam MP, Everman DB, Mirzaa GM, Pagon RA, Wallace SE, Bean LJH, Gripp KW and Amemiya A (Eds.);

GENEREVIEWS(R);

(1993)

PUBMED [20301471](#)

REFERENCE 18 (bases 1 to 2512)

AUTHORS Lamb,P. and Crawford,L.

TITLE Characterization of the human p53 gene

JOURNAL Mol Cell Biol 6 (5), 1379-1385 (1986)

PUBMED [2946935](#)

REFERENCE 19 (bases 1 to 2512)

AUTHORS Isobe,M., Emanuel,B.S., Givol,D., Oren,M. and Croce,C.M.

TITLE Localization of gene for human p53 tumour antigen to band 17p13

JOURNAL Nature 320 (6057), 84-85 (1986)

PUBMED [3456488](#)

REFERENCE 20 (bases 1 to 2512)

AUTHORS Benchimol,S., Lamb,P., Crawford,L.V., Sheer,D., Shows,T.B.,

Bruns,G.A. and Peacock,J.

TITLE Transformation associated p53 protein is encoded by a gene on human chromosome 17

JOURNAL Somat Cell Mol Genet 11 (5), 505-510 (1985)

PUBMED [2994241](#)

REFERENCE 21 (bases 1 to 2512)

AUTHORS Harlow,E., Williamson,N.M., Ralston,R., Helfman,D.M. and Adams,T.E.

TITLE Molecular cloning and in vitro expression of a cDNA clone for human cellular tumor antigen p53

JOURNAL Mol Cell Biol 5 (7), 1601-1610 (1985)

PUBMED [3894933](#)

REFERENCE 22 (bases 1 to 2512)

AUTHORS Zakut-Houri,R., Bienz-Tadmor,B., Givol,D. and Oren,M.

TITLE Human p53 cellular tumor antigen: cDNA sequence and expression in COS cells

JOURNAL EMBO J 4 (5), 1251-1255 (1985)

PUBMED [4006916](#)

REFERENCE 23 (bases 1 to 2512)

AUTHORS Matlashewski,G., Lamb,P., Pim,D., Peacock,J., Crawford,L. and Benchimol,S.

TITLE Isolation and characterization of a human p53 cDNA clone: expression of the human p53 gene

JOURNAL EMBO J 3 (13), 3257-3262 (1984)

PUBMED [6396087](#)

COMMENT REVIEWED [REFSEQ](#): This record has been curated by NCBI staff. The reference sequence was derived from [DA453049.1](#), [X02469.1](#) and [AK223026.1](#).

On Feb 13, 2020 this sequence version replaced [NM_000546.5](#).

Summary: This gene encodes a tumor suppressor protein containing transcriptional activation, DNA binding, and oligomerization domains. The encoded protein responds to diverse cellular stresses to regulate expression of target genes, thereby inducing cell cycle arrest, apoptosis, senescence, DNA repair, or changes in metabolism. Mutations in this gene are associated with a variety of human cancers, including hereditary cancers such as Li-Fraumeni syndrome. Alternative splicing of this gene and the use of alternate promoters result in multiple transcript variants and isoforms. Additional isoforms have also been shown to result from the use of alternate translation initiation codons from identical transcript variants (PMIDs: 12032546, 20937277). [provided by RefSeq, Dec 2016].

Transcript Variant: This variant (1) can initiate translation from

two in-frame AUG start codons. The isoform represented in this variant (a, also known as p53alpha) results from translation initiation at the upstream start codon. Both variants 1 and 2 encode isoform a, which is the longest isoform.

Publication Note: This RefSeq record includes a subset of the publications that are available for this gene. Please see the Gene record to access additional publications.

##Evidence-Data-START##
Transcript exon combination :: BC003596.1, AF307851.1 [ECO:0000332]
RNAseq introns :: mixed sample support SAMEA1965299, SAMEA1966682 [ECO:0006172]
##Evidence-Data-END##

##RefSeq-Attributes-START##
MANE Ensembl match :: ENST00000269305.9/ ENSP00000269305.4
RefSeq Select criteria :: based on manual assertion, conservation, expression, longest protein
##RefSeq-Attributes-END##
COMPLETENESS: full length.

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	8-1324	X02469.1	1-1317	
	1325-2512	AK223026.1	478-1665	
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source	1..2512 /organism="Homo sapiens" /mol_type="mRNA" /db_xref="taxon:9606" /chromosome="17" /map="17p13.1"			
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/evidence=ECO:0000269|PubMed:15186775"
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/evidence=ECO:0000269|PubMed:10570149,
ECO:0000269|PubMed:11554766, ECO:0000269|PubMed:15866171,
ECO:0000269|PubMed:17108107, ECO:0000269|PubMed:17591690,
ECO:0000269|PubMed:17967874, ECO:0000269|PubMed:21317932,
ECO:0000269|PubMed:28842590; propagated from
UniProtKB/Swiss-Prot (P04637.4); phosphorylation site"
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ECO:0000269|PubMed:10951572, ECO:0000269|PubMed:16704422;
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phosphorylation site"
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ECO:0000269|PubMed:11447225, ECO:0000269|PubMed:11551930,
ECO:0000269|PubMed:12810724, ECO:0000269|PubMed:20041275;
propagated from UniProtKB/Swiss-Prot (P04637.4);
phosphorylation site"
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/evidence=ECO:0000269|PubMed:17591690,
ECO:0000269|PubMed:9372954; propagated from
UniProtKB/Swiss-Prot (P04637.4); phosphorylation site"
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/evidence=ECO:0000269|PubMed:17254968; propagated from
UniProtKB/Swiss-Prot (P04637.4); phosphorylation site"
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/evidence=ECO:0000269|PubMed:11740489,
ECO:0000269|PubMed:11780126, ECO:0000269|PubMed:16377624,
ECO:0000269|PubMed:17349958, ECO:0000269|PubMed:17591690;

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ECO:0000269|PubMed:20124405; propagated from
UniProtKB/Swiss-Prot (P04637.4); phosphorylation site"

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Region: Interaction with HIPK1. /evidence=ECO:0000250"

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Region: Interaction with AXIN1. /evidence=ECO:0000250"

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 Region: Nuclear export signal"
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ORIGIN

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