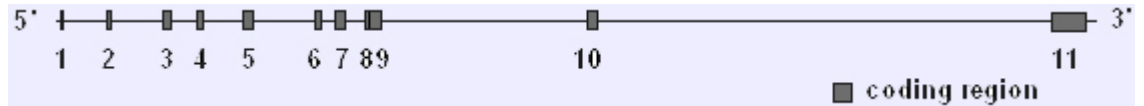


STK4 (serine/threonine kinase 4)

Identity

Note	STK4 encodes a serine/threonine specific protein kinase that is a member of the GC kinase branch of the STE20 family. STK4 plays a role in apoptosis and may have tumor suppressor function.
Other names	MST1 KRS2
Hugo	<u>STK4</u>
Location	20q11.2-q13.2 centromere - YWHAB - TOMM34 - STK4 - MATN4 - RBPSUHL - telomere
Note	STK4 encodes a serine/threonine specific protein kinase that is a member of the GC kinase branch of the STE20 family. STK4 plays a role in apoptosis and may have tumor suppressor function.

DNA/RNA



The alignment of STK4 mRNA to its genomic sequence

Description	The STK4 gene contains 11 exons. The sizes of the exons 1-11 are 68, 81, 129, 115, 165, 168, 138, 129, 192, 154, and 585 bps. Exon 1 contains the 5' untranslated region and the translation initiation ATG, and a few additional codons. Exon 11 contains the stop codon and the 3' untranslated region. Other features of the STK4 gene, such as promoters or enhancer elements, have not been described.
Transcription	A 7 kb transcript is detected in many tissues with highest steady state levels in the thymus and bone marrow. The predominant human STK4 mRNA encodes an open reading frame of 1883 bases, resulting in a predicted proteins of 487 amino acids.

Protein



Structure of STK4 protein. The catalytic (protein kinase) domain occupies the N-terminal half of STK4. The regulatory domain inhibits kinase activity and also contains

a dimerization motif. A caspase-sensitive cleavage site is located between these two domains.

- Description** STK4 is a member of the GC kinase group of the STE20 family of serine/threonine protein kinases. STK4 homodimerizes through a C-terminal motif, and removal of the C terminus results in marked activation of the kinase. STK4 is cleaved by caspases during apoptosis, releasing an active 34 kD kinase fragment. STK4 associates with the WW-domain protein Salvadore, which may link STK4 to the LATS tumor suppressor pathway.
- Expression** Widely expressed in both embryonic and adult tissues.
- Localisation** Nucleus and cytoplasm. In the nucleus, STK4 phosphorylates Histone 2B at Ser 14, a modification associated with chromosome condensation in apoptotic cells.
- Function** STK4 plays a role in promoting apoptosis, in particular, in chromosome condensation during programmed cell death. STK4 is cleaved by caspase 3 during apoptosis, releasing the highly active N-terminal kinase domain. This active protein promotes apoptosis by activating JNK and also by further caspase activation. STK4, and/or the highly related protein, may act as tumor suppressors, acting downstream of Raf.
- Homology** STK3 (a.k.a. MST2, KRS1).

External links

Nomenclature

- [Hugo](#) [STK4](#)
- [GDB](#) [STK4](#)
- [Entrez Gene](#) [STK4 6789](#) serine/threonine kinase 4

Cards

- [GeneCards](#) [STK4](#)
- [Ensembl](#) [STK4](#)
- [Genatlas](#) [STK4](#)
- [GeneLynx](#) [STK4](#)
- [eGenome](#) [STK4](#)
- [euGene](#) [6789](#)

Genomic and cartography

- [GoldenPath](#) [STK4](#) - [chr20:43028534-43142005](#) + [20q13.12](#) (hg18-Mar_2006)
- [Ensembl](#) [STK4 - 20q13.12 \[CytoView\]](#)
- [NCBI](#) [Genes Cyto](#) [Gene Seq](#) [Map View - NCBI]
- [OMIM](#) [Disease map \[OMIM\]](#)
- [HomoloGene](#) [STK4](#)

Gene and transcription

Genbank	AB209315 [ENTREZ]
Genbank	AK027088 [ENTREZ]
Genbank	AL597960 [ENTREZ]
Genbank	BC005231 [ENTREZ]
Genbank	BC015332 [ENTREZ]
RefSeq	NM_006282 [SRS] NM_006282 [ENTREZ]
AceView	STK4 AceView - NCBI
TRASER	STK4 Traser - Stanford
Unigene	Hs.472838 [SRS] Hs.472838 [NCBI] HS472838 [spliceNest]
Protein : pattern, domain, 3D structure	
SwissProt	Q13043 [SRS] Q13043 [EXPASY] Q13043 [INTERPRO]
Prosite	PS00107 PROTEIN KINASE ATP [SRS] PS00107 PROTEIN KINASE ATP [Expasy]
Prosite	PS50011 PROTEIN KINASE DOM [SRS] PS50011 PROTEIN KINASE DOM [Expasy]
Prosite	PS00108 PROTEIN KINASE ST [SRS] PS00108 PROTEIN KINASE ST [Expasy]
Prosite	PS50951 SARAH [SRS] PS50951 SARAH [Expasy]
Interpro	IPR011009 Kinase like [SRS] IPR011009 Kinase like [EBI]
Interpro	IPR000719 Prot kinase [SRS] IPR000719 Prot kinase [EBI]
Interpro	IPR011524 SARAH [SRS] IPR011524 SARAH [EBI]
Interpro	IPR008271 Ser thr pkin AS [SRS] IPR008271 Ser thr pkin AS [EBI]
Interpro	IPR002290 Ser thr pkinase [SRS] IPR002290 Ser thr pkinase [EBI]
CluSTr	Q13043
Pfam	PF00069 Pkinase [SRS] PF00069 Pkinase [Sanger] pfam00069 [NCBI-CDD]
Smart	SM00220 S_TKc [EMBL]
Prodom	PD000001 Prot kinase [INRA-Toulouse]
Prodom	Q13043 STK4 HUMAN [Domain structure] Q13043 STK4 HUMAN [sequences sharing at least 1 domain]
Blocks	Q13043
HPRD	Q13043
Protein Interaction databases	
DIP	Q13043
IntAct	Q13043
Polymorphism : SNP, mutations, diseases	
OMIM	604965 [map]
GENECLINICS	604965
SNP	STK4 [dbSNP-NCBI]

SNP	NM_006282 [SNP-NCI]
SNP	STK4 [GeneSNPs - Utah] STK4 [HGBASE - SRS]
HAPMAP	STK4 [HAPMAP]
	General knowledge
Family Browser	STK4 [UCSC Family Browser]
SOURCE	NM_006282
SMD	Hs.472838
SAGE	Hs.472838
Enzyme	2.7.11.1 [Enzyme-SRS] 2.7.11.1 [Brenda-SRS] 2.7.11.1 [KEGG] 2.7.11.1 [WIT]
Amigo	nucleotide binding
Amigo	magnesium ion binding
Amigo	protein kinase activity
Amigo	protein serine/threonine kinase activity
Amigo	protein-tyrosine kinase activity
Amigo	ATP binding
Amigo	ATP binding
Amigo	ATP binding
Amigo	nucleus
Amigo	protein amino acid phosphorylation
Amigo	protein amino acid phosphorylation
Amigo	protein amino acid phosphorylation
Amigo	apoptosis
Amigo	signal transduction
Amigo	cell surface receptor linked signal transduction
Amigo	protein kinase cascade
Amigo	integral to membrane
Amigo	transferase activity
Amigo	identical protein binding
Amigo	positive regulation of apoptosis
Amigo	protein dimerization activity
PubGene	STK4
	Other databases
	Probes
Probe	STK4 Related clones (RZPD - Berlin)
	PubMed
PubMed	27 Pubmed reference(s) in LocusLink

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Written 11-2005 Jonathan Chernoff

Citation

This paper should be referenced as such :

Chernoff J . STK4 (serine/threonine kinase 4). Atlas Genet Cytogenet Oncol Haematol. November 2005 .

URL : <http://AtlasGeneticsOncology.org/Genes/STK4ID42440ch20q11.html>

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