JUN (V-Jun sarcoma virus 17 oncogene homolog (avian))

Identity

Other names: **c-jun**

Activator Protein-1

Hugo: **JUN**

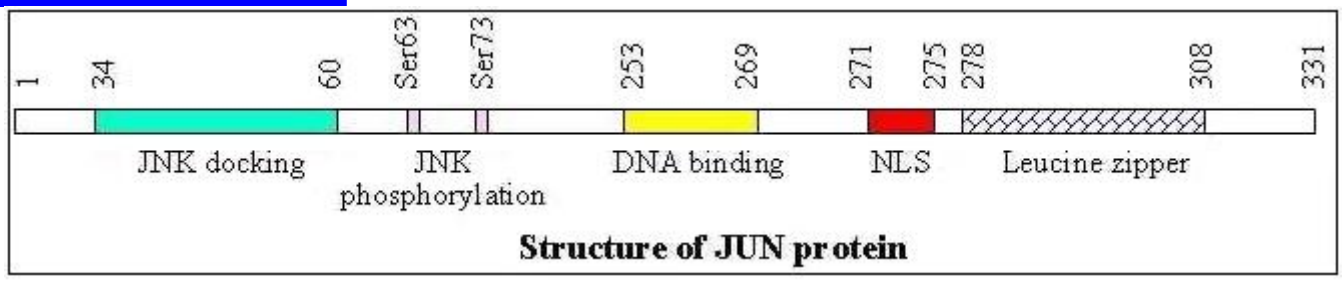
Location: 1p32-p31

DNA/RNA

Description: The Jun gene maps on chromosome 1p32-p31 spanning 333799bp. The study by Hattori et al suggested that the Jun gene has no introns.

Transcription: Due to 5' and 3' heterogeneities, several transcripts of Jun mRNA has been identified. The predicted molecular weight of JUN protein is 41.9 kD.

Protein



Structure of JUN protein

Description: The JUN protein was originally identified as an oncoprotein encoded by a cellular insert in the genome of avian sarcoma virus 17. Following studies demonstrated that JUN is a critical component of AP-1 transcription factor that recognizes the palindromic DNA sequence TGAC/GTCA, the so-called TPA response element (TRE), in the promoter or intron region of a number of genes. JUN can stably associate with itself or Fos protein to form AP-1 complex. JUN can also interact with some activating transcription factor (ATF) members, such as ATF2, ATF3 and ATF4, to form heterodimers that bind to the cAMP-responsive element (CRE) DNA sequence, TGACGTCA. All JUN proteins from different species contain a N-terminal JNK docking domain (delta domain) adjacent to the JNK phosphorylating site Ser63/73. In the C-terminal, there is a basic domain for DNA binding, followed by a nuclear localization signal (NLS) and a leucine zipper motif for dimerization with partner proteins.

Expression: Ubiquitously expressed.

Localisation: Nuclear and mitochondria.

Function: JUN is the most important component of AP-1 transcription factors, and its transcriptional activity is possibly attenuated by JUNB or JUND. It has been well accepted that JUN regulates cell proliferation, apoptosis and transformation. JUN promotes cell cycle transition from G1 phase to S phase by up-regulating cyclin D1 expression and antagonizing the

function of p53and p21. The JUN protein is involved in both the induction and prevention of apoptosis, possibly dependent on the types and development stages of cells. JUN-dependent induction of pro-apoptotic protein FasL and Bim has been demonstrated in several experimental systems. However, evidence indicating an anti-apoptotic activity of JUN has also been provided by the fact that deficiency of Jun gene causes massive hepatocyte apoptosis. The potential oncogenic transformation of JUN has been revealed by overexpression experiments. This effect of JUN may partially through the induction of certain JUN targeting genes, such as heparin-bind epidermal growth factor-like growth factor (HB-EGF), proliferin and Jun-activated gene in chicken embryo fibroblasts (JAC).

Implicated in

Entity Inflammation

Entity cancer

Oncogenesis Overexpression of JUN has been observed in certain human cancer. However, no mutation, rearrangement or amplification of Jun gene has been reported.

External links

	Nomenclature
Hugo	JUN
GDB	JUN
Entrez_Gene	JUN 3725 v-jun sarcoma virus 17 oncogene homolog (avian)
	Cards
Atlas	**JUNID151**
GeneCards	JUN
Ensembl	JUN
CancerGene	JUN
Genatlas	JUN
GeneLynx	JUN
eGenome	JUN
euGene	3725
	Genomic and cartography
GoldenPath	JUN - chr1:58958484-58961806 - 1p32.1 (hg17-May_2004)
Ensembl	JUN - 1p32.1 [CytoView]
NCBI	Genes Cyto Gene Seq [Map View - NCBI]
OMIM	Disease map [OMIM]
HomoloGene	JUN
	Gene and transcription
Genbank	AY217548 [SRS] AY217548 [ENTREZ]
Genbank	J04111 [SRS] J04111 [ENTREZ]
Genbank	BC002646 [SRS] BC002646 [ENTREZ]
Genbank	BC006175 [SRS] BC006175 [ENTREZ]
Genbank	BC009874 [SRS] BC009874 [ENTREZ]
RefSeq	NM_002228 [SRS] NM_002228 [ENTREZ]
RefSeq	NT_086582 [SRS] NT_086582 [ENTREZ]
AceView	JUN AceView - NCBI
TRASER	JUN Traser - Stanford

Unigene	Hs.525704 [SRS] Hs.525704 [NCBI] HS525704 [spliceNest]
	Protein : pattern, domain, 3D structure
SwissProt	P05412 [SRS] P05412 [EXPASY] P05412 [INTERPRO]
Prosite	PS50217 BZIP [SRS] PS50217 BZIP [Expasy]
Prosite	PS00036 BZIP_BASIC [SRS] PS00036 BZIP_BASIC [Expasy]
Interpro	IPR008917 Euk_transcr_DNA [SRS] IPR008917 Euk_transcr_DNA [EBI]
Interpro	IPR005643 JNK [SRS] IPR005643 JNK [EBI]
Interpro	IPR002112 Leuzip_Jun [SRS] IPR002112 Leuzip_Jun [EBI]
Interpro	IPR004827 TF_bZIP [SRS] IPR004827 TF_bZIP [EBI]
CluSTr	P05412
Pfam	PF00170 bZIP [SRS] PF00170 bZIP [Sanger] pfam00170 [NCBI-CDD]
Pfam	PF03957 Jun [SRS] PF03957 Jun [Sanger] pfam03957 [NCBI-CDD]
Smart	SM00338 BRLZ [EMBL]
Blocks	P05412
PDB	1A02 [SRS] 1A02 [PdbSum], 1A02 [IMB]
PDB	1FOS [SRS] 1FOS [PdbSum], 1FOS [IMB]
PDB	1JNM [SRS] 1JNM [PdbSum], 1JNM [IMB]
PDB	1JUN [SRS] 1JUN [PdbSum], 1JUN [IMB]
	Polymorphism : SNP, mutations, diseases
OMIM	165160 [map]
GENECLINICS	165160
SNP	JUN [dbSNP-NCBI]
SNP	NM_002228 [SNP-NCI]
SNP	JUN [GeneSNPs - Utah] JUN [SNP - CSHL] JUN] [HGBASE - SRS]
	General knowledge
Family Browser	JUN [UCSC Family Browser]
SOURCE	NM_002228
SMD	Hs.525704
SAGE	Hs.525704
Amigo	function|RNA polymerase II transcription factor activity
Amigo	component|nuclear chromosome
Amigo	process|regulation of transcription, DNA-dependent
Amigo	function|transcription factor activity
BIOCARTA	The 4-1BB-dependent immune response
BIOCARTA	Angiotensin II mediated activation of JNK Pathway via Pyk2 dependent signaling
BIOCARTA	Pertussis toxin-insensitive CCR5 Signaling in Macrophage
BIOCARTA	IL12 and Stat4 Dependent Signaling Pathway in Th1 Development
BIOCARTA	TPO Signaling Pathway
BIOCARTA	Agrin in Postsynaptic Differentiation
BIOCARTA	Oxidative Stress Induced Gene Expression Via Nrf2
BIOCARTA	ATM Signaling Pathway
BIOCARTA	BCR Signaling Pathway
BIOCARTA	Role of EGF Receptor Transactivation by GPCRs in Cardiac Hypertrophy
BIOCARTA	Cadmium induces DNA synthesis and proliferation in macrophages
BIOCARTA	D4-GDI Signaling Pathway
BIOCARTA	Repression of Pain Sensation by the Transcriptional Regulator DREAM
BIOCARTA	EGF Signaling Pathway

BIOCARTA	EPO Signaling Pathway
BIOCARTA	METS affect on Macrophage Differentiation
BIOCARTA	FAS signaling pathway (CD95)
BIOCARTA	Fc Epsilon Receptor I Signaling in Mast Cells
BIOCARTA	Inhibition of Cellular Proliferation by Gleevec
BIOCARTA	Signaling Pathway from G-Protein Families
BIOCARTA	Hypoxia-Inducible Factor in the Cardiovascular System
BIOCARTA	IGF-1 Signaling Pathway
BIOCARTA	Signal transduction through IL1R
BIOCARTA	IL 2 signaling pathway
BIOCARTA	IL 6 signaling pathway
BIOCARTA	Insulin Signaling Pathway
BIOCARTA	Integrin Signaling Pathway
BIOCARTA	Keratinocyte Differentiation
BIOCARTA	Signaling of Hepatocyte Growth Factor Receptor
BIOCARTA	Nerve growth factor pathway (NGF)
BIOCARTA	The information-processing pathway at the IFN-beta enhancer
BIOCARTA	PDGF Signaling Pathway
BIOCARTA	Mechanism of Gene Regulation by Peroxisome Proliferators via PPARa(alpha)
BIOCARTA	Links between Pyk2 and Map Kinases
BIOCARTA	TNF/Stress Related Signaling
BIOCARTA	T Cell Receptor Signaling Pathway
BIOCARTA	TNFR1 Signaling Pathway
BIOCARTA	Toll-Like Receptor Pathway
BIOCARTA	TSP-1 Induced Apoptosis in Microvascular Endothelial Cell
PubGene	JUN
	Other databases
	Probes
Probe	JUN Related clones (RZPD - Berlin)
	PubMed
PubMed	**74 Pubmed reference(s) in LocusLink**

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Contributor(s)

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