MLLT7 (myeloid/lymphoid or mixed-lineage leukemia (trithorax homolog, Drosophila); translocated to, 7) (updated: old version not available)

Identity

Other names	**AFX1 (ALL1 fused gene from chromosome X, 1)**
	MLLT7 (myeloid/lymphoid leukemia translocated to, 7)
	AFX
	FOXO4
Hugo	**MLLT7**
Location	Xq13

DNA/RNA

Transcription	7,5kb consisting of 3 exons. RNA App. 3.5 kb mRNA; coding sequence. Placental secondary transcript: App. 2.8kb Expression pattern: Heavily expressed in skeletal muscle, placenta and ovary

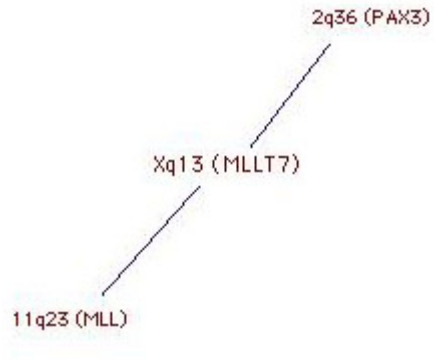
Protein

Description	504 amino acids; NH2 -- similarity region with AF6q21 and FHKR -- forkhead motif -- COOH
Expression	wide
Localisation	nuclear
Function	Transcription factor binding to the motive TTGTTTAC. Target genes: Akt, AFX is able to induce Rb-independent, p27kip1-mediated G1-arrest. Phosphorylation of AFX by protein kinase B inhibits its transcriptional activity.
Homology	daf-16 (C.elegans) and other forkhead-transcription factors (i.e. FKHR, FKHRL1, FKHRP1, FKHRL1P1) and AF6q21, involved in the t(6;11)(q21;q23). In the fusion protein AFX/MLL, AFX fuses to MLL in the same aminoacid as FHKR fuses to PAX3 in the PAX3/FKHR-fusion protein of alveolar rabdomyosarcoma.

Implicated in

Entity	t(X;11)(q13q23)/acute leukaemias --> MLL - AFX
Disease	ANLL, T-ALL
Prognosis	very poor
Hybrid/Mutated Gene	5' MLL-3' AFX as well as the reciprocal 5' AFX-3' MLL on DNA and mRNA level
Abnormal Protein	comprises about 1400 amino acids from N-term MLL and 354 amino acids from AFX C-term; the reciprocal may be expressed

Breakpoints



MLLT7 and partners. Editor 08/2005.

External links

	Nomenclature
Hugo	MLLT7
GDB	MLLT7
Entrez_Gene	MLLT7 4303 myeloid/lymphoid or mixed-lineage leukemia (trithorax homolog, Drosophila); translocated to, 7
	Cards
Atlas	**AFX1ID57**
GeneCards	MLLT7
Ensembl	MLLT7
CancerGene	MLLT7
Genatlas	MLLT7
GeneLynx	MLLT7
eGenome	MLLT7
euGene	4303
	Genomic and cartography
GoldenPath	MLLT7 - Xq13 chrX:70099231-70106405 + Xq13.1 (hg17-May_2004)
Ensembl	MLLT7 - Xq13.1 [CytoView]
NCBI	Genes Cyto Gene Seq [Map View - NCBI]
OMIM	Disease map [OMIM]
HomoloGene	MLLT7
	Gene and transcription
Genbank	Y11284 [SRS] Y11284 [ENTREZ]
Genbank	Y11285 [SRS] Y11285 [ENTREZ]
Genbank	Y11286 [SRS] Y11286 [ENTREZ]
Genbank	AF384029 [SRS] AF384029 [ENTREZ]
Genbank	U10072 [SRS] U10072 [ENTREZ]
RefSeq	NM_005938 [SRS] NM_005938 [ENTREZ]
RefSeq	NT_086956 [SRS] NT_086956 [ENTREZ]
AceView	MLLT7 AceView - NCBI
TRASER	MLLT7 Traser - Stanford
Unigene	Hs.239663 [SRS] Hs.239663 [NCBI] HS239663 [spliceNest]
	Protein : pattern, domain, 3D structure
SwissProt	P98177 [SRS] P98177 [EXPASY] P98177 [INTERPRO]
Prosite	PS00657 FORK_HEAD_1 [SRS] PS00657 FORK_HEAD_1 [Expasy]
Prosite	PS00658 FORK_HEAD_2 [SRS] PS00658 FORK_HEAD_2 [Expasy]
Prosite	PS50039 FORK_HEAD_3 [SRS] PS50039 FORK_HEAD_3 [Expasy]

Interpro	IPR001766 TF_Fork_head [SRS] IPR001766 TF_Fork_head [EBI]
Interpro	IPR009058 Wing_hlx_DNA_bnd [SRS] IPR009058 Wing_hlx_DNA_bnd [EBI]
CluSTr	P98177
Pfam	PF00250 Fork_head [SRS] PF00250 Fork_head [Sanger] pfam00250 [NCBI-CDD]
Smart	SM00339 FH [EMBL]
Prodom	PD000425 TF_Fork_head[INRA-Toulouse]
Prodom	P98177 FXO4_HUMAN [Domain structure] P98177 FXO4_HUMAN [sequences sharing at least 1 domain]
Blocks	P98177
PDB	1,00E+17 [SRS] 1,00E+17 [PdbSum], 1,00E+17 [IMB]
	Polymorphism : SNP, mutations, diseases
OMIM	300033 [map]
GENECLINICS	300033
SNP	MLLT7 [dbSNP-NCBI]
SNP	NM_005938 [SNP-NCI]
SNP	MLLT7 [GeneSNPs - Utah] MLLT7 [SNP - CSHL] MLLT7] [HGBASE - SRS]
	General knowledge
Family Browser	MLLT7 [UCSC Family Browser]
SOURCE	NM_005938
SMD	Hs.239663
SAGE	Hs.239663
Amigo	process|cell cycle arrest
Amigo	process|negative regulation of cell proliferation
Amigo	component|nucleus
Amigo	process|regulation of transcription, DNA-dependent
Amigo	function|transcription factor activity
Amigo	process|transcription from Pol II promoter
BIOCARTA	AKT Signaling Pathway
BIOCARTA	Ras Signaling Pathway
PubGene	MLLT7
	Other databases **Probes**
Probe	Cancer Cytogenetics (Bari)
Probe	MLLT7 Related clones (RZPD - Berlin)
	PubMed
PubMed	**13 Pubmed reference(s) in LocusLink**

Bibliography

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Parry P, Wei Y, Evans G.
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Medline 95118921

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Borkhardt A, Repp R, Haas OA, Leis T, Harbott J, Kreuder J, Hammermann J, Henn T, Lampert F.
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Medline 97163401

AFX1 and p54nrb: fine mapping, genomic structure, and exclusion as candidate genes of X-linked dystonia parkinsonism.
Peters U, Haberhausen G, Kostrzewa M, Nolte D, Muller U.
Hum Genet 1997; 100: 569-572.
Medline 9341872

Direct control of the Forkhead transcription factor AFX by protein kinase B.
Kops GJ, de Ruiter ND, Vries-Smits AM, Powell DR, Bos JL, Burgering BM.
Nature 1999; 398: 630-634.
Medline 10217147

AFX-like Forkhead transcription factors mediate cell-cycle regulation by Ras and PKB through p27kip1
Medema RH, Kops GJ, Bos JL, Burgering BM.
Nature 2000; 404: 782-787.
Medline 10783894

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URL : http://www.infobiogen.fr/services/chromcancer/Genes/AFX1ID57.html