

TPM3 (tropomyosin 3)

Identity

Other names **NEM1**
 Hugo **TPM3**
 Location 1q25

DNA/RNA

Description spans at least 42 kb; 13 exons

Protein

Description by tissue-specific alternate splicing are produced 2 proteins: the tropomyosin alpha chain, skeletal muscle type, made of 284 amino acids (32 kDa), and the cytoskeletal type, made of 248 amino acids (29 kDa). Coiled-coil structure

Function Tropomyosins are actin-binding proteins; component of cytoskeletal microfilaments; tropomyosins mediate the effect of Ca²⁺ on the myosin-actin interaction In skeletal muscles, but their function in smooth muscles and other tissues is yet unknown

Homology Other tropomyosins: TPM1 (alpha) located in 15q22, TPM2 (beta), located in 9q13, and [TPM4](#) located in 19p13.1

Implicated in

Entity rare cases of ALK+ [anaplastic large cell lymphoma](#) (ALCL) with [t\(1;2\)\(q25;p23\)](#)

Disease ALCL presents as an aggressive lymphoma with systemic signs

Prognosis nonetheless, have a favourable prognosis

Hybrid/Mutated Gene 5' CLTC - 3' [ALK](#)

Abnormal Protein 104 kDa ; 221 N-term amino acids from TPM3 fused to the 562 C-term amino acids from ALK (i.e. the entire cytoplasmic portion of ALK with the tyrosine kinase domain); homodimerization of the fusion protein.

Oncogenesis TPM3-ALK is constitutively activated

Entity cases of [inflammatory myofibroblastic tumors](#) with [t\(1;2\)\(q25;p23\)](#)

Disease rare soft tissue tumour found in children and young adults

Prognosis good prognosis

Hybrid/Mutated Gene 5' CLTC - 3' [ALK](#)

Abnormal Protein 104 kDa ; 221 N-term amino acids from TPM3 fused to the 562 C-term amino acids from ALK (i.e. the entire cytoplasmic portion of ALK with the tyrosine kinase domain); homodimerization of the fusion protein.

Oncogenesis TPM3-ALK is constitutively activated

Entity [papillary thyroid carcinoma](#)

Disease represents about 60% of thyroid cancers; small, undetectable,

	chromosome 1q inversions have shown to produce a TPM3-NTRK1 hybrid gene in a very few cases of papillary thyroid carcinoma.
Prognosis	prognosis of papillary thyroid carcinoma is excellent
Hybrid/Mutated Gene	5' TPM3 - 3' NTRK1
Abnormal Protein	221 N-term amino acids from PM3 fused to the C-term of NTRK1, including its tyrosine kinase domain

Breakpoints

To be noted

ALK and TPM3 are therefore implicated in both anaplastic large cell lymphoma and inflammatory myofibroblastic tumours; this is a new concept, that 2 different types of tumour may result from the same chromosomal and genes rearrangement.

External links

	Nomenclature	
Hugo	TPM3	
GDB	TPM3	
Entrez_Gene	TPM3 7170 tropomyosin 3	
	Cards	
Atlas	TPM3ID225	
GeneCards	TPM3	
Ensembl	TPM3	
CancerGene	TRK	
Genatlas	TPM3	
GeneLynx	TPM3	
eGenome	TPM3	
euGene	7170	
	Genomic and cartography	
GoldenPath	TPM3 - 1q25 chr1:150953020-150977650 - 1q21.3 (hg17-May_2004)	
Ensembl	TPM3 - 1q21.3 [CytoView]	
NCBI	Genes Cyto	Gene Seq [Map View - NCBI]
OMIM	Disease map [OMIM]	
HomoloGene	TPM3	
	Gene and transcription	
Genbank	AL590431 [SRS]	AL590431 [ENTREZ]
Genbank	AB062125 [SRS]	AB062125 [ENTREZ]
Genbank	AF362887 [SRS]	AF362887 [ENTREZ]
Genbank	AF474157 [SRS]	AF474157 [ENTREZ]
Genbank	AK026559 [SRS]	AK026559 [ENTREZ]
RefSeq	NM_152263 [SRS]	NM_152263 [ENTREZ]
RefSeq	NM_153649 [SRS]	NM_153649 [ENTREZ]
RefSeq	NT_086596 [SRS]	NT_086596 [ENTREZ]
AceView	TPM3 AceView - NCBI	
TRASER	TPM3 Traser - Stanford	
Unigene	Hs.449194 [SRS]	Hs.449194 [NCBI] HS449194 [spliceNest]
	Protein : pattern, domain, 3D structure	

[SwissProt](#) [P06753](#) [SRS] [P06753](#) [EXPASY] [P06753](#) [INTERPRO]
[Prosite](#) [PS00326 TROPOMYOSIN](#) [SRS] [PS00326 TROPOMYOSIN](#) [Expasy]
[Interpro](#) [IPR002017 Spectrin](#) [SRS] [IPR002017 Spectrin](#) [EBI]
[Interpro](#) [IPR000533 Tropomyosin](#) [SRS] [IPR000533 Tropomyosin](#) [EBI]
[CluSTr](#) [P06753](#)
[Pfam](#) [PF00261 Tropomyosin](#) [SRS] [PF00261 Tropomyosin](#) [Sanger]
[Blocks](#) [pfam00261](#) [NCBI-CDD]

Polymorphism : SNP, mutations, diseases

[OMIM](#) [191030](#) [[map](#)]
[GENECLINICS](#) [191030](#)
[SNP](#) [TPM3](#) [dbSNP-NCBI]
[SNP](#) [NM_152263](#) [SNP-NCI]
[SNP](#) [NM_153649](#) [SNP-NCI]
[SNP](#) [TPM3](#) [GeneSNPs - Utah] [TPM3](#) [SNP - CSHL] [TPM3](#) [HGBASE - SRS]

General knowledge

[Family Browser](#) [TPM3](#) [UCSC Family Browser]
[SOURCE](#) [NM_152263](#)
[SOURCE](#) [NM_153649](#)
[SMD](#) [Hs.449194](#)
[SAGE](#) [Hs.449194](#)
[Amigo](#) [function|actin binding](#)
[Amigo](#) [component|cytoskeleton](#)
[Amigo](#) [component|cytoskeleton](#)
[Amigo](#) [process|muscle development](#)
[Amigo](#) [component|muscle thin filament tropomyosin](#)
[Amigo](#) [process|regulation of muscle contraction](#)
[PubGene](#) [TPM3](#)

Other databases

Probes

[Probe](#) [Cancer Cytogenetics \(Bari\)](#)
[Probe](#) [TPM3 Related clones \(RZPD - Berlin\)](#)

PubMed

[PubMed](#) [13 Pubmed reference\(s\) in LocusLink](#)

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[BiblioGene - INIST](#)

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URL : <http://www.infobiogen.fr/services/chromcancer/Genes/TPM3ID225.html>

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