

PSIP1 (PC4 and SFRS1 interacting protein 1)

Identity

Other names	LEDGF (lens epithelium-derived growth factor) p75 p52
Hugo	PSIP1
Location	9p22.3

DNA/RNA

Description	The gene contains at least 15 exons and 14 introns.
Transcription	Two alternative splice variants: p75 and p52.

Protein

Description	530 amino acids (p75), 333 amino acids (p52); N-term - PWWP (proline-tryptophan-tryptophan-proline) domain NLS (nuclear localization signal) AT-hook-like Coiled coil IBD (integrase binding domain) HTH1 (helix-turn-helix DNA binding motif) HTH2 C-term.
Expression	Expression of PSIP1 has been reported to be increased in human breast and bladder cancer, prostate tumors and benign prostate hyperplasia.
Localisation	nuclear.
Function	Transcriptional regulation of stress-associated genes, mRNA splicing and cell survival. The involvement of PSIP1 (LEDGF) has been reported in human immunodeficiency virus type-1 (HIV-1) integration, autoimmune disorders, and neurogenesis. Recent data reveal LEDGF as an oncogenic protein that controls a caspase-independent lysosomal cell death pathway.
Homology	PSIP1 belongs to the hepatoma-derived growth factor (HDGF) family of proteins that contain a well conserved N-terminal amino acid sequence known as the HATH (homologous to amino terminus of HDGF) region.

Implicated in

Entity	t(9;11)(p22;p15) NUP98-PSIP1
Note	acute non lymphoblastic leukemia (ANLL) , one case of transformed .
Hybrid/Mutated Gene	5' NUP98 - 3' PSIP1.
Abnormal Protein	Fuses the GLFG repeat domains of NUP98 to the COOH-terminus of PSIP1.

External links

Nomenclature

Hugo	PSIP1
GDB	PSIP1
Entrez_Gene	PSIP1_11168 PC4 and SFRS1 interacting protein 1

Cards

Atlas	PSIP1ID405ch9q22
GeneCards	PSIP1
Ensembl	PSIP1
GenAtlas	PSIP1

[GeneLynx](#) [PSIP1](#)
[eGenome](#) [PSIP1](#)
[euGene](#) [11168](#)

Genomic and cartography

[GoldenPath](#) [PSIP1 - 9p22.3 chr9:15460644-15500250 - 9p22.3](#) (hg18-Mar_2006)
[Ensembl](#) [PSIP1 - 9p22.3 \[CytoView\]](#)
[NCBI](#) [Mapview](#)
[OMIM](#) [Disease map \[OMIM\]](#)
[HomoloGene](#) [PSIP1](#)

Gene and transcription

[Genbank](#) [AF063020](#) [ENTREZ]
[Genbank](#) [AF098482](#) [ENTREZ]
[Genbank](#) [AF098483](#) [ENTREZ]
[Genbank](#) [AF432220](#) [ENTREZ]
[Genbank](#) [BC013160](#) [ENTREZ]
[RefSeq](#) [NM_021144](#) [SRS] [NM_021144](#) [ENTREZ]
[RefSeq](#) [NM_033222](#) [SRS] [NM_033222](#) [ENTREZ]
[RefSeq](#) [AC_000052](#) [SRS] [AC_000052](#) [ENTREZ]
[RefSeq](#) [NC_000009](#) [SRS] [NC_000009](#) [ENTREZ]
[RefSeq](#) [NT_008413](#) [SRS] [NT_008413](#) [ENTREZ]
[RefSeq](#) [NW_924062](#) [SRS] [NW_924062](#) [ENTREZ]
[AceView](#) [PSIP1](#) AceView - NCBI
[Unigene](#) [Hs.658434](#) [SRS] [Hs.658434](#) [NCBI] [HS658434](#) [spliceNest]

Protein : pattern, domain, 3D structure

[SwissProt](#) [O75475](#) [SRS] [O75475](#) [EXPASY] [O75475](#) [INTERPRO]
[Prosite](#) [PS50812 PWWP](#) [SRS] [PS50812 PWWP](#) [Expasy]
[Interpro](#) [IPR000637 AT hook DNA bd](#) [SRS] [IPR000637 AT hook DNA bd](#) [EBI]
[Interpro](#) [IPR000313 PWWP](#) [SRS] [IPR000313 PWWP](#) [EBI]
[CluSTr](#) [O75475](#)
[Pfam](#) [PF00855 PWWP](#) [SRS] [PF00855 PWWP](#) [Sanger] [pfam00855](#) [NCBI-CDD]
[Smart](#) [SM00293 PWWP](#) [EMBL]
[Blocks](#) [O75475](#)
[PDB](#) [1Z9E](#) [SRS] [1Z9E](#) [PdbSum], [1Z9E](#) [IMB] [1Z9E](#) [RSDB]
[PDB](#) [2B4J](#) [SRS] [2B4J](#) [PdbSum], [2B4J](#) [IMB] [2B4J](#) [RSDB]
[HPRD](#) [O75475](#)

Protein Interaction databases

[DIP](#) [O75475](#)
[IntAct](#) [O75475](#)

Polymorphism : SNP, mutations, diseases

[OMIM](#) [603620](#) [map]
[GENECLINICS](#) [603620](#)
[SNP](#) [PSIP1](#) [dbSNP-NCBI]
[SNP](#) [NM_021144](#) [SNP-NCI]

[SNP](#) [NM_033222](#) [SNP-NCI]
[SNP](#) [PSIP1](#) [GeneSNPs - Utah] [PSIP1](#) [HGBASE - SRS]
[HAPMAP](#) [PSIP1](#) [HAPMAP]

General knowledge

[Family Browser](#) [PSIP1](#) [UCSC Family Browser]
[SOURCE](#) [NM_021144](#)
[SOURCE](#) [NM_033222](#)
[SMD](#) [Hs.658434](#)
[SAGE](#) [Hs.658434](#)
[GO](#) [DNA binding](#) [Amigo] [DNA binding](#)
[GO](#) [nucleus](#) [Amigo] [nucleus](#)
[GO](#) [transcription](#) [Amigo] [transcription](#)
[GO](#) [regulation of transcription, DNA-dependent](#) [Amigo] [regulation of transcription, DNA-dependent](#)
[PubGene](#) [PSIP1](#)

Other databases

Probes

[Probe](#) [PSIP1 Related clones \(RZPD - Berlin\)](#)

PubMed

[PubMed](#) [39 Pubmed reference\(s\) in LocusLink](#)

Bibliography

t(9;11)(p22;p15) in acute myeloid leukemia results in a fusion between NUP98 and the gene encoding transcriptional coactivators p52 and p75-lens epithelium-derived growth factor (LEDGF).

Ahuja HG, Hong J, Aplan PD, Tcheurekdjian L, Forman SJ, Slovak ML.
Cancer Res 2000; 60: 6227-6229.
Medline [11103774](#)

Lens epithelium-derived growth factor (LEDGF/p75) and p52 are derived from a single gene by alternative splicing.

Singh DP, Kimura A, Chylack LT, Shinohara T.
Gene 2000; 242: 265-273.
Medline [10721720](#)

Fusion of the NUP98 gene with the LEDGF/p52 gene defines a recurrent acute myeloid leukemia translocation.

Hussey DJ, Moore S, Nicola M, Dobrovic A.
BMC Genet 2001; 2:20.
Medline [11737860](#)

Caspase cleavage of the nuclear autoantigen LEDGF/p75 abrogates its pro-survival function: implications for autoimmunity in atopic disorders.

Wu X, Daniels T, Molinaro C, Lilly MB, Casiano CA
Cell Death Differ 2002; 9: 915-925.
Medline [12181742](#)

HIV-1 integrase forms stable tetramers and associates with LEDGF/p75 protein in human cells.

Cherepanov P, Maertens G, Proost P, Devreese B, Van Beeumen J, Engelborghs Y, De Clercq E,

Debyser Z.
J Biol Chem 2003; 278: 372-381.
Medline [12407101](#)

Antinuclear autoantibodies in prostate cancer: immunity to LEDGF/p75, a survival protein highly expressed in prostate tumors and cleaved during apoptosis.

Daniels T, Zhang J, Gutierrez I, Elliot ML, Yamada B, Heeb MJ, Sheets SM, Wu X, Casiano CA.
Prostate 2005; 62: 14-26.
Medline [15389814](#)

NUP98-LEDGF fusion and t(9;11) in transformed chronic myeloid leukemia.

Grand FH, Koduru P, Cross NC, Allen SL.
Leuk Res 2005; 29: 1469-1472.
Medline [15982735](#)

t(9;11)(p22;p15) with NUP98-LEDGF fusion gene in pediatric acute myeloid leukemia.

Morerio C, Acquila M, Rosanda C, Rapella A, Tassano E, Micalizzi C, Panarello C.
Leuk Res 2005; 29: 467-470.
Medline [15725483](#)

DNA binding domains and nuclear localization signal of LEDGF: contribution of two helix-turn-helix (HTH)-like domains and a stretch of 58 amino acids of the N-terminal to the trans-activation potential of LEDGF.

Singh DP, Kubo E, Takamura Y, Shinohara T, Kumar A, Chylack LT Jr, Fatma N.
J Mol Biol 2006; 355: 379-394.
Medline [16318853](#)

Disruption of Ledgf/Psip1 results in perinatal mortality and homeotic skeletal transformations.

Sutherland HG, Newton K, Brownstein DG, Holmes MC, Kress C, Semple CA, Bickmore WA.
Mol Cell Biol 2006; 26: 7201-7210.
Medline [16980622](#)

Lens epithelium-derived growth factor is an Hsp70-2 regulated guardian of lysosomal stability in human cancer.

Daugaard M, Kirkegaard-Sorensen T, Ostenfeld MS, Aaboe M, Hoyer-Hansen M, Orntoft TF, Rohde M, Jaattela M.
Cancer Res 2007; 67: 2559-2567.
Medline [17363574](#)

[REVIEW articles](#) *automatic search in PubMed*

[Last year publications](#) *automatic search in PubMed*

[BiblioGene - INIST](#)
[Search in all EBI](#)

Contributor(s)

Written 03-2007 Cristina Morerio, Claudio Panarello

Citation

This paper should be referenced as such :

Morerio C, Panarello C . PSIP1 (PC4 and SFRS1 interacting protein 1). Atlas Genet Cytogenet Oncol Haematol. March 2007 .

URL : <http://AtlasGeneticsOncology.org/Genes/PSIP1ID405ch9q22.html>

