

MVP (major vault protein)

Identity

Note drug resistance gene, codes for a "lung resistance-related protein" (LRP) originally detected in a lung carcinoma cell line resistant to chemotherapy

Other names **LRP (lung resistance-related protein)**

Hugo **MVP**

Location 16p11.2

DNA/RNA

Transcription coding sequence, corresponding to full mRNA, is 2840 bp long

Protein

Description 110 KD protein, 896 amino acids; major cytoplasmic vault protein; vaults are nucleoproteic complexes composed of the MVP associated with two high-molecular weight proteins p240 and p193 which surround a small 140 nucleotides RNA species

Expression expressed in a variety of human tumor cell lines, the major part being multidrug resistant; expressed also in primary solid tumors, mainly [colon carcinoma](#) or [ovarian carcinoma](#), as well as in hematopoietic cancers (myelodysplastic syndrome, acute myeloid or lymphoid leukemia, [multiple myeloma](#)); in normal tissues, LRP expression has a wide distribution, with particularly high levels in epithelial cells of the digestive tract

Localisation cytoplasmic, in the cytosol, with a little fraction (approximately 5%) located in the nuclear membrane and nuclear pores

Function vault are cytoplasmic organelles which mediate bidirectional nucleocytoplasmic transport of a wide range of substrates, including cytotoxic drugs; vaults would be involved both in vesicle and cytosolic transport of molecules

Homology 104 kD rat MVP

Implicated in

Entity implicated in induced multidrug-resistance to anticancer chemotherapy

Disease it includes resistance to doxorubicin, vinca alkaloids, mitoxantrone and etoposide; the role of LRP by itself in multidrug-resistance is not completely clear because it is only a part of a nucleo-proteic complex involved in macromolecules transport: the introduction and expression

of the LRP gene in cells by transfection does not confer a multidrug-resistance phenotype; overexpression of LRP has been associated with poor response to chemotherapy in various types of leukemia and in ovarian carcinoma, however the role of LRP as prognostic factor remains controversial; in multi-resistant cell lines, LRP amplification within a homogeneous staining region is exceptional

External links

Nomenclature

Hugo	MVP
GDB	MVP
Entrez_Gene	MVP_9961 major vault protein

Cards

Atlas	LRPID120
GeneCards	MVP
Ensembl	MVP
Genatlas	MVP
GeneLynx	MVP
eGenome	MVP
euGene	9961

Genomic and cartography

GoldenPath	MVP - 16p11.2 chr16:29739288-29766842 + 16p11.2 (hg18-Mar_2006)
Ensembl	MVP - 16p11.2 [CytoView]
NCBI	Genes Cyto Gene Seq [Map View - NCBI]
OMIM	Disease map [OMIM]

HomoloGene	MVP
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Gene and transcription

Genbank	AJ291366 [ENTREZ]
Genbank	AJ291367 [ENTREZ]
Genbank	BC008932 [ENTREZ]
Genbank	BC015623 [ENTREZ]
Genbank	CR618185 [ENTREZ]
RefSeq	NM_005115 [SRS] NM_005115 [ENTREZ]
RefSeq	NM_017458 [SRS] NM_017458 [ENTREZ]
AceView	MVP AceView - NCBI
TRASER	MVP Traser - Stanford
Unigene	Hs.513488 [SRS] Hs.513488 [NCBI] HS513488 [spliceNest]

Protein : pattern, domain, 3D structure

SwissProt	Q14764 [SRS] Q14764 [EXPASY] Q14764 [INTERPRO]
Interpro	IPR002499 Vault_N [SRS] IPR002499 Vault_N [EBI]
CluSTr	Q14764
Pfam	PF01505 Vault [SRS] PF01505 Vault [Sanger] pfam01505 [NCBI-CDD]
Blocks	Q14764

Protein Interaction databases

DIP	Q14764
IntAct	Q14764

Polymorphism : SNP, mutations, diseases

OMIM	605088 [map]
GENECLINICS	605088
SNP	MVP [dbSNP-NCBI]
SNP	NM_005115 [SNP-NCI]
SNP	NM_017458 [SNP-NCI]
SNP	MVP [GeneSNPs - Utah] MVP [HGBASE - SRS] MVP [SNP - HAPMAP]

General knowledge

Family Browser	MVP [UCSC Family Browser]
SOURCE	NM_005115
SOURCE	NM_017458
SMD	Hs.513488
SAGE	Hs.513488
Amigo	nucleus
Amigo	cytoplasm
Amigo	ribonucleoprotein complex
Amigo	response to drug
PubGene	MVP

Other databases

Probes

Probe	MVP Related clones (RZPD - Berlin)
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PubMed

PubMed	31 Pubmed reference(s) in LocusLink
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Bibliography

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Medline [93088080](#)

The LRP gene encoding a major vault protein associated with drug resistance maps proximal to MRP on chromosome 16: evidence that chromosome breakage plays a key role in MRP or LRP gene amplification.

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Eur J Cancer 1996; 32A: 979-984. **(REVIEW)**

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Expression of the human major vault protein LRP in acute myeloid leukemia.

Hart SM, Ganeshaguru K, Scheper RJ, Prentice HG, Hoffbrand AV, Mehta AB.

Exp Hematol 1997; 25: 1227-1232.

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Increased LRP mRNA expression is associated with the MDR phenotype in intrinsically resistant human cancer cell lines.

Laurencot CM, Scheffer GL, Scheper RJ, Shoemaker RH.

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Coexpression of multidrug resistance involve proteins: a flow cytometric analysis.

Boutonnat J, Bonnefoix T, Mousseau M, Seigneurin D, Ronot X.

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Medline [9713498](#)

P-glycoprotein (PGP), and not lung resistance-related protein (LRP), is a negative prognostic factor in secondary leukemias.

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Blood 1998; 91: 1508-1513.

Medline [98139442](#)

Multidrug resistance in leukemia.

Leith C.

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Medline [9747635](#)

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Lepelley P, Poulain S, Gardel N, Preudhomme C, Cosson A, Fenaux P.

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Increased expression of multidrug resistance related proteins Pgp, MRP1, and LRP/MVP occurs early in colorectal carcinogenesis.

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[BiblioGene - INIST](#)

Contributor(s)

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