**MVP (major vault protein)**

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### Identity

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

**HGNC (Hugo):** MVP

**Location:** 16p11.2

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

### 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

**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 pronostic factor remains controversial; in multi-resistant cell lines, LRP amplification within a homogeneous staining region is exceptional.
References


Laurençot CM, Scheffer GL, Schepet RJ, Shoemaker RH. Increased LRP mRNA expression is associated with the MDR phenotype in intrinsically resistant human cancer cell lines. Int J Cancer. 1997 Sep 17;72(6):1021-6


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