Gene Section
Short Communication

**PRDM16 (PR domain containing 16)**

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**Identity**

Other names: MEL1 (MDS1/EVI1-like gene); PR-domain zinc finger protein 16
HGNC (Hugo): PRDM16
Location: 1p36.3
Location (base pair): 2,768,744
Note: Orientation plus strand.

**DNA/RNA**

Description
Spans 369 kb; 17 exons; 3827 bp coding sequence.

Transcription
Alternative transcripts MEL1 and MEL1S (MEL1 short).

**Protein**

Description
170 kDa (MEL1) and 150 Da (MEL1S); like MDS1/EVI1, The MEL1 contains a PR domain (homologous to the SET domain present in MLL) in the N term, two DNA binding domains (made of 7 and 3 zing fingers) separated by a repression domain, and an acidic domain at the C-term. MEL1S lacks the PR domain, like EVI1 alone. MEL1 and MEL1S, in a "yin-yang fashion", are hypothesized to display antagonistic properties; the PR domain may act as an inhibitor of tumorigenesis.

Expression
Wide, contrarily to what was previously found.

Probe(s) - Courtesy Mariano Rocchi, Resources for Molecular Cytogenetics.
**Localisation**

Nuclear.

**Homology**

63% homology with MDS1/EVI1; both are members of the PR domain family.

**Implicated in**

\[ t(1;3)(p36;q21) \] myeloid leukemias --> involving RPN1 and MEL1

**Disease**

Myelodysplastic syndromes (MDS), acute non lymphoblastic leukemias (ANLL), therapy-related leukemias and myeloproliffrative syndromes; with features similar to those of the 3q21q26 syndrome, including megakaryocytic dysplasia (see also 3q rearrangements in myeloid malignancies).

**Prognosis**

Very poor.

**Hybrid/Mutated gene**

Juxtaposition of the enhancer of the constitutively expressed housekeeping gene RPN1, normally sitting in 3q21, in 5’ of MEL1 on der(1); both genes are orientated telomere to centromere; the same situation occurs between RPN1 in 5’ of EVII in the t(3;3)(q21;q26).

**Oncogenesis**

The translocation results in either an ectopic expression of MEL1 driven by RPN1 or by disruption of its PR domain; this probable heterogeneity may be associated with different clinical features. The short form, MEL1S, is mainly expressed.

**References**


Mochizuki N, Shimizu S, Nagasawa T, Tanaka H, Taniwaki M, Yokota J, Morishita K. A novel gene, MEL1, mapped to 1p36.3 is highly homologous to the MDS1/EVI1 gene and is transcriptionally activated in t(1;3)(p36;q21)-positive leukemia cells. Blood. 2000 Nov 1;96(9):3209-14


Lahortiga I, Agirre X, Belloni E, Vázquez I, Larroyoz MJ, Gasparini P, Lo Coco F, Pelicci PG, Calasanz MJ, Odero MD. Molecular characterization of a t(1;3)(p36;q21) in a patient with MDS. MEL1 is widely expressed in normal tissues, including bone marrow, and it is not overexpressed in the t(1;3) cells. Oncogene. 2004 Jan 8;23(1):311-6

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