Gene Section
Mini Review

GRAF (GTPase activating protein for Rho associated with FAK)

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Identity

Other names: GRAF (GTPase activating protein for Rho associated with FAK); KIAA0621; OPHN1L
HGNC (Hugo): ARHGAP26
Location: 5q31
Local order: Just centromeric of GRL.

DNA/RNA

Description
At least 24 exons.

Transcription
Two isoforms of 2277 bp (leukocytes) and 2442 bp (brain); transcripts of 4,4 and 9,5 kb.

Protein

Description
Isoform A: 759 amino acids, 86 kDa; isoform B: 814 amino acids, 92 kDa.

Expression
Highly expressed in epithelial tissues i.e. pancreas islet beta-cells, testicles, prostate, mammary gland, GI glands, squamous layer of skin epithelium; highly expressed in nervous tissues including enteric ganglia; expressed in cardiomyocytes, erythropoiesis cells and liver.

Localisation
Mainly cytoplasmatic.
**Function**
Interacts with FAK and RhoA both in vivo and in vitro; acts as GTPase activating protein (GAP) for the active GTP-bound RhoA; negative regulator of RhoA.

**Homology**
Oligophrenin-1, Beta-chimerin, BCR.

**Mutations**

**Germinal**
Not known.

**Somatic**
Deletion of four bases (251-254, A in ATG=nt1)

Insert 1158.
GRAF-base 1144,
5’ 1 TA GAG ACA GGA TTT CAT CAT GTC GGC CAG GTT GGT TTT GAA
42 TTC CTG ACC TCA AGT CAT CCA CCT GCC TCG GCC TCC CAA AGT
84 GGT GGG ATT TTG G 3’
...GRAF-base 1145

Insert 1299.
GRAF-base 1285.
5’ 1 TC ATC GTT GTC ATA TAA ATC GGC GAG GTA ATA CAT CAT CAG
42 GTA GAC ATA CG 3’
...GRAF-base 1286. Predicted STOP codon underlined.

Insert 2002.
5’ 1 G GTT CAT GCG AGT TCA GCA AGC AGT TAC CAT GTC TAC GGC
41 ATG CCA GGA TAC TGT TGG GAA GGT AGT ATT CCG T 3’
...GRAF-base 1989

**Implicated in**

\texttt{t(5;11)(q31;q23)/acute non lymphocytic leukemia --> MLL - GRAF}

**Prognosis**
Unknown; only a few cases.

**Hybrid/Mutated gene**
5’ MLL 3’ GRAF

**Abnormal protein**
MLL-GRAF

**Acute non lymphocytic leukemia and myelodysplastic syndrome with del(5q)**

**Prognosis**
Unknown.

**Cytogenetics**
del(5q).

**Oncogenesis**
Basically unknown; a bi-allelic loss of GRAF has been documented in three cases of ANLL.

**References**

This article should be referenced as such: