

RAP1GDS1

Identity

Other names **RAP1**
GTP-GDP dissociation stimulator 1
 Hugo **RAP1GDS1**
 Location 4q22.3

DNA/RNA

Description 181.2 kb - 15 exons
 Transcription mRNA 2487 bases

Protein

Description rap1gds, also referred as smgGDS - 61.1 kDa, 558 aa. Contains in major part an armadillo motif, which is composed of tandemly repeated sequences of 43 amino acid residues.
 Expression Ubiquitary, high level of expression in central nervous system.
 Function Acts as guanine nucleotide exchange factor (GEF). Activates GDP/GTP exchange reaction on numerous small proteins with GTPase activity (G proteins) containing a C-terminal polybasic region (PBR), including Ras and Rho family GTPases such as [rap1a](#), [rap1b](#), [K-ras](#), rac1, rac2, rhoA, ralB. These proteins play a pivotal role in cell proliferation, differentiation and oncogenic transformation.
 Homology With other mammalian rap1gds1 proteins.

Implicated in

Entity [t\(4;11\)\(q21;p15\)](#).
 Disease T cell acute lymphocytic leukemia.
 Cytogenetics Additional anomalies in 2/3 cases.
 Hybrid/Mutated Gene Quasi totality of RAP1GDS1 fused with 5' part of [NUP98](#).
 Abnormal Protein Chimeric protein 5' -NUP98 - RAP1GDS1 - 3'.

External links

Nomenclature
[Hugo](#) [RAP1GDS1](#)
[GDB](#) [RAP1GDS1](#)
[Entrez Gene](#) [RAP1GDS1 5910](#) RAP1, GTP-GDP dissociation stimulator 1

Cards
[GeneCards](#) [RAP1GDS1](#)
[Ensembl](#) [RAP1GDS1](#)
[CancerGene](#) [RAP1GDS1](#)
[Genatlas](#) [RAP1GDS1](#)
[GeneLynx](#) [RAP1GDS1](#)
[eGenome](#) [RAP1GDS1](#)
[euGene](#) [5910](#)

Genomic and cartography

[GoldenPath](#) [RAP1GDS1](#) - [4q22.3](#) [chr4:99539798-99720993](#) + [4q23](#) (hg17-May_2004)
[Ensembl](#) [RAP1GDS1](#) - [4q23](#) [CytoView]
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[OMIM](#) [Disease map](#) [OMIM]
[HomoloGene](#) [RAP1GDS1](#)

Gene and transcription

[Genbank](#) [AF215923](#) [SRS] [AF215923](#) [ENTREZ]
[Genbank](#) [AF237413](#) [SRS] [AF237413](#) [ENTREZ]
[Genbank](#) [AK055032](#) [SRS] [AK055032](#) [ENTREZ]
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[Genbank](#) [BC001816](#) [SRS] [BC001816](#) [ENTREZ]
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[RefSeq](#) [NT_086651](#) [SRS] [NT_086651](#) [ENTREZ]
[AceView](#) [RAP1GDS1](#) AceView - NCBI
[TRASER](#) [RAP1GDS1](#) Traser - Stanford
[Unigene](#) [Hs.132858](#) [SRS] [Hs.132858](#) [NCBI] [HS132858](#) [spliceNest]

Protein : pattern, domain, 3D structure

[SwissProt](#) [P52306](#) [SRS] [P52306](#) [EXPASY] [P52306](#) [INTERPRO]
[Prosite](#) [PS50176 ARM_REPEAT](#) [SRS] [PS50176 ARM_REPEAT](#) [Expasy]
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[Blocks](#) [P52306](#)

Polymorphism : SNP, mutations, diseases

[OMIM](#) [179502](#) [map]
[GENECLINICS](#) [179502](#)
[SNP](#) [RAP1GDS1](#) [dbSNP-NCBI]
[SNP](#) [NM_021159](#) [SNP-NCI]
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General knowledge

[Family Browser](#) [RAP1GDS1](#) [UCSC Family Browser]
[SOURCE](#) [NM_021159](#)
[SMD](#) [Hs.132858](#)
[SAGE](#) [Hs.132858](#)
[Amigo](#) [function|GTPase activator activity](#)
[Amigo](#) [function|binding](#)
[Amigo](#) [process|biological_process unknown](#)
[Amigo](#) [component|cellular_component unknown](#)
[PubGene](#) [RAP1GDS1](#)

Other databases

Probes

[Probe](#) [RAP1GDS1 Related clones \(RZPD - Berlin\)](#)

PubMed

[PubMed](#) [6 Pubmed reference\(s\) in LocusLink](#)

Bibliography

SmgGDS stabilizes nucleotide-bound and -free forms of the Rac1 GTP-binding protein and stimulates GTP/GDP exchange through a substituted enzyme

mechanism.

Chuang TH, Xu X, Quilliam LA, Bokoch GM.

Biochem J 1994; 303 (Pt 3): 761-767.

Medline [7980444](#)

The (4;11) (q21;p15) translocation fuses the NUP98 and RAP1GDS1 genes and is recurrent in T-cell acute lymphocytic leukemia.

Hussey DJ, Nicola M, Moore S, Peters GB, Dobrovic A.

Blood 1999; 94: 2072-2079.

Medline [10477737](#)

Mecucci C, La Starza R, Negrini M, Sabbioni S, Crescenzi B, Leoni P, Di Raimondo F, Krampera M, Cimino G, Tafuri A, Cuneo A, Vitale A, Foa R.

t(4;11)(q21;p15) translocation involving NUP98 and RAP1GDS1 genes:

characterization of a new subset of T acute lymphoblastic leukaemia.

Br J Haematol 2000; 109(4): 788-793.

Medline [10929031](#)

SmgGDS displays differential binding and exchange activity towards different Ras isoforms.

Vikis HG, Stewart S, Guan KL.

Oncogene 2002; 21(15): 2425-2432.

Medline [11948427](#)

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Contributor(s)

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URL : <http://www.infobiogen.fr/services/chromcancer/Genes/RAP1GDS1ID400.html>

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