

Gene Section

Mini Review

NRAS (neuroblastoma RAS viral oncogene homolog)

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Identity

Other names: N-RAS (neuroblastoma RAS viral oncogene homolog)

HGNC (Hugo): NRAS

Location: 1p13

Note: More on the RAS family is available as a deep insight.

DNA/RNA

Description

Consists of seven exons, spread over 8 kb of genomic DNA.

Transcription

Inefficient processing of pre-mRNA reveals two

different transcripts of 4.3 kb and 2 kb (see Fig), differing in the extension of the 3' end of the smaller message; the longer transcript is probably a result of an RNA-extension through the termination site.

Protein

Description

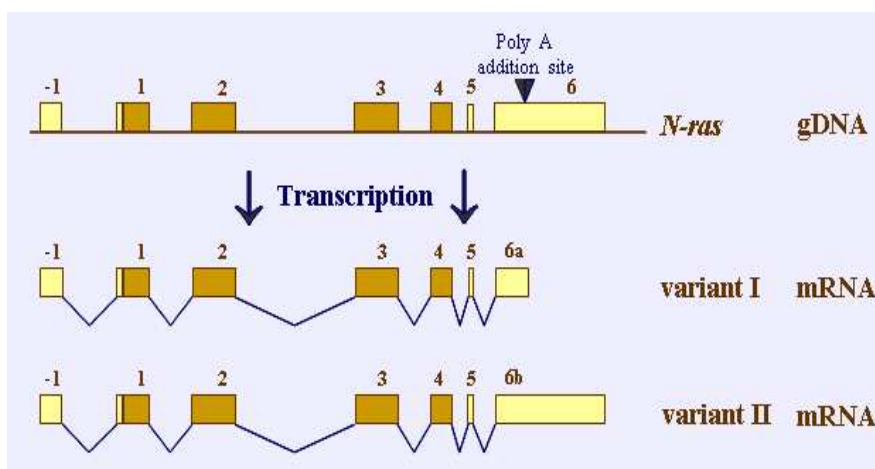
p21N-ras; regular RAS protein - characterized in the page.

Expression

Ubiquitously expressed.

Localisation

Anchored to the inner surface of the plasma membrane.



Evolution of two N-ras mRNA transcripts the slightly differing consensus sequence of the poly A addition site (AATATA instead of AATAAA) leads to inefficient processing and to two different RNA transcripts; exons that encode protein are shown as black boxes, untranslated exons as white boxes; the upstream untranslated exon is indicated as exon -1.

Function

Analogously to other GTP-binding proteins (such as Translation Elongation Factor EFTu or signal transducing G-Proteins) RAS proteins are involved in signal transduction pathways.

Homology

Ras gene family is part of the ras superfamily including the mammalian RAS, RAL, RAC, RHO, RAP, and RAB gene families and the yeast homologs like SEC4 and YPT1 genes; genes encode small monomeric proteins of low molecular mass (20-30 kDa) which share at least 30% homology to RAS proteins.

Implicated in

Tumor (frequency of N-RAS mutations); references in Full Bibliography

Acute non lymphocytic leukemia and myelodysplasia (20-40%)

Chronic myelogenous leukemia, acute lymphocytic leukemia (0-10%)

Brain (0-15%)

Skin (0-20%)

Thyroid (0-60%)

Testis (0-40%)

Stomach (gastric tumors) (5%)

Testis liver (0-15%)

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