KRAS (Kirsten rat sarcoma 2 viral oncogene homolog)

Franz Watzinger, Thomas Lion

Children's Cancer Research Institute, Kinderspitalgasse 6, A-1090 Vienna, Austria (FW, TL)

Published in Atlas Database: February 1999

Online updated version: http://AtlasGeneticsOncology.org/Genes/KRASID91.html

DOI: 10.4267/2042/37505

Identity

Other names: K-RAS (Kirsten rat sarcoma 2 viral oncogene homolog); c-Ki-ras 2
HGNC (Hugo): KRAS
Location: 12p12
Note: More on the RAS family is available as a deep insight.

DNA/RNA

K-ras splicing variants
alternative splicing of K-ras precursor mRNA leads to the two transcripts which differ by the exclusion of Exon 4a; Exons that encode protein are shown as black boxes, untranslated exons as white boxes; the upstream untranslated exon is indicated as Exon -1.

Transcription

Consists of six exons, spread over 35 kb of genomic DNA.

Description

Regular RAS protein - characterized in the RAS family page.

Expression

Ubiquitously expressed.

Localisation

Anchored to the inner surface of the plasma membrane.

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 K-RAS mutations); references in Full Bibliography
Pancreas (80-90%)
Colon and rectum (25-60%)
Lung (25-60%)
Prostate (0-25%)
Skin (0-25%)
Thyroid (0-60%)
Liver (10-25%)
Ovary (0-50%)
Endometrium (10-40%)
Kidney (0-50%)
Brain (0-15%)
Testis (seminoma) (10-45%)
Acute non lymphocytic leukemia and myelodysplasia (5-15%)
Urinary bladder (5%)
Head and neck (10%)
Breast (10%)

References


This article should be referenced as such: