

Gene Section

Mini Review

REL (v-rel reticuloendotheliosis viral oncogene homolog (avian))

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Identity

Other names: c-rel

HGNC (Hugo): REL

Location: 2p13-p12

Note

See also, in the Deep Insight section: Upstream Signal Transduction of NF- κ B Activation.

DNA/RNA

Description

The gene encoding human Rel has 11 exons spanning ~40 kb. The promoter region of rel gene contains five NF- κ B binding sites and six Sp1 binding sites, and a number of AP2 sites. Thus, the expression of rel gene might be through auto-regulation along with certain stress signals.

Protein

Description

The human rel gene encodes a protein composed 619 amino acids with an approximately molecular weight of 68-70 kDa. The Rel protein is structurally similar with other Rel family members containing RHD, NLS and TA domain. However, analysis of X-ray crystal structure revealed that the Rel homodimer preferentially binds to the CD28RE with higher affinity as compared to other canonical kB sequences.

Expression

Wide.

Localisation

Cytosol, nuclei after activation.

Function

regulation of the genes involved in cell-to-cell interaction, intercellular communication, cell recruitment or transmigration, amplification or spreading of primary pathogenic signals, cell apoptosis, and initiation or acceleration of tumorigenesis. Interaction with: members of I κ B family and Rel family; MKK4; c-Fos; c-Jun; UBE2; PPP4C.

Implicated in

Cancer, autoimmune arthritis, glomerulonephritis, asthma, inflammatory bowel disease, septic shock, lung fibrosis, HTLV-1 infection, and AIDS

Oncogenesis

Amplification of rel locus was frequently noted in a number of lymphomas.

Note

Only one report suggested the rearrangement of rel gene in certain type of lymphomas. This rearrangement of rel gene resulted in the deletion of the C-terminal domain of Rel and the fusion of the RHD of Rel with Nrg.

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