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Gene Section
Mini Review

ANLN (anillin, actin binding protein)

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Identity

Other names: ANILLIN; Scraps; scra

HGNC (Hugo): ANLN

Location: 7p14.2

Local order: The human ANLN gene maps on 7p15-p14 between the KIAA0895 and the ENSG00000210490 loci.

DNA/RNA

Description

The ANLN gene consists of 63,969 bases and at least 23 exons.

Transcription

The transcribed mRNA is 4,786 bp.

Protein

Description

The human ANLN cDNA encodes a protein (1124 amino acids; 124199 Da) that includes an actin-binding domain and a C-terminal domain with pleckstrin homology (PH). It also contains several consensus nuclear localization sequences (NLS) and one consensus SH3-binding motif.

Expression

ANLN is mainly expressed in adult placenta, testis, and spinal cord, and in fetal organs (brain, heart, kidney, liver, lung, skeletal muscle, spleen and thymus).

Localisation

ANLN is mainly found in nucleus, cytoplasm, cytoskeleton, cleavage furrow, and cell cortex.

Function

Anillin (ANLN) was initially characterized as a human homologue of anillin, a Drosophila actin-binding protein. ANLN localizes not only to the cytoplasm but also to nuclei in some proportion of cancer cells; it is likely to present at the cortex following breakdown of the nuclear envelope, and in the cleavage furrow during cytokinesis. ANLN plays an important role in cell-cycle progression. In late phases ANLN may assemble the actin and myosin contractile ring that separates daughter cells, through interaction with at least two other furrow proteins, actin and septins (SEPTs). ANLN is supposed to be a substrate of the anaphase-promoting complex/cyclosome (APC/C), a ubiquitin ligase that controls mitotic progression.

Implicated in

Lung cancer

Prognosis

Nuclear ANLN (n-ANLN) was indicated to be an independent prognostic factor for patients with non-small cell lung cancer.

Oncogenesis

ANLN interacts with and activates RHOA, and this complex is likely to be essential for the growth-promoting pathway and aggressive features of lung cancers as well as for cell division. Moreover n-ANLN whose nuclear localization and stability are regulated by PI3K/AKT signaling, appears to regulate the malignant potential of cancer cells.

Prostate cancer

Note

Overexpression of ANLN was observed in hormone-refractory prostate cancers (HRPCs).

Head and neck squamous cell carcinoma

Note

Overexpression of ANLN was observed in head and neck squamous cell carcinomas (HNSCCs).

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