Atlas of Genetics and Cytogenetics in Oncology and Haematology

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Gene Section
Mini Review

DKC1 (dyskeratosis congenita 1, dyskerin)

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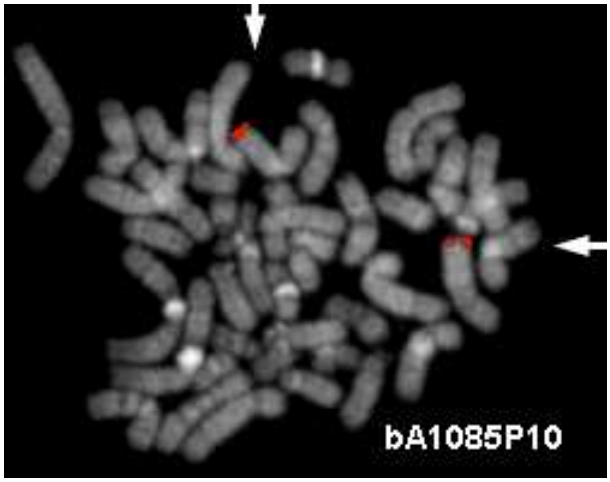
Identity

HGNC (Hugo): DKC1

Location: Xq28

Local order: Distal, DKC1 is between DXS1684 and DXS1108.



Probe(s) - Courtesy Mariano Rocchi, Resources for Molecular Cytogenetics.

Note: X-linked dyskeratosis congenita (genes for dominant and recessive autosomal forms have not been identified).

DNA/RNA

Description

Gene composed of 15 exons (exons 1 and 15 non coding) / 15 kb length.
cDNA 2465 bp (open reading frame between nt 93 and 1637).

Protein

Description

Dyskerin, 514 amino acids, 57 kDa.

Expression

Widespread tissue expression.

Function

Multifunctional nucleolar protein which associates with H+ACA (hairpin-linge hairpin-tail) class of small nucleolar RNA as its catalytic sub-unit; implicated in centromere function; associated also with the telomerase RNA component; function in ribosome biosynthesis.

Homology

Highly conserved in eukaryotes: Nap57 (nucleolar associated protein) in the rat, Nop60B in drosophila, Cbf5p (centromere/microtubule binding protein) in yeast. Regional homologies with bacterial Trub proteins and Saccharomyces cerevisiae PUS4 protein.

Implicated in

Disease
Dyskeratosis congenita, X-linked recessive form.

Hybrid/Mutated gene
Missense mutation by single-nucleotide substitution at position 1058 in exon 11 (A353V) detected in several different families. Sporadic other missense mutations were detected in exon 3, 4, 10, 12 and in intron 2. Rare deletions and no null mutations are observed.

Abnormal protein

Non functional protein. It is not presently known how the different mutations affect the protein activity and are responsible of the various phenotypes.

Oncogenesis

Myelodysplasia and leukemia following bone marrow failure and pancytopenia. Spinocellular carcinoma, other carcinomas of various localization.

References

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