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Gene Section
Mini Review

NUP98 (nucleoporin 98 kDa)

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Huret JL. NUP98 (nucleoporin 98 kDa). Atlas Genet Cytogenet Oncol Haematol.1998;2(1):7.

Identity

HGNC (Hugo): NUP98

Location: 11p15

DNA/RNA

Transcription

3.6, 6.5, 7.0 kb mRNA.

Protein

Description

920 amino acids; 97 kDa; contains repeated motifs (GLFG and FG) in N-term and a RNA binding motif in C-term.

Expression

Wide.

Localisation

Nuclear membrane localisation.

Function

Nucleoporin: associated with the nuclear pore complex; role in nucleocytoplasmic transport processes.

Homology

Member of the GLFG nucleoporins.

Implicated in

inv (11)(p15q22)/ myelodysplasic syndrome (MDS) or acute non lymphocytic leukemia (ANLL) --> NUP98-DDX10

Disease

Therapy related MDS (t-MDS) and ANLL; de novo ANLL.

Hybrid/Mutated gene

5' NUP98 - 3' DDX10.

Abnormal protein

Fuses the GLFG repeat domains of NUP98 to the acidic domain of DDX10.

t(1;11)(q23;p15.5)/t-MDS orANLL --> NUP98-PMX1

Disease

One case of t-ANLL.

Hybrid/Mutated gene

5' NUP98 - 3' PMX1.

NUP98 protein - Lyndal Kearney.

Abnormal protein
Fuses the GLFG repeat domains of NUP98 to the homeodomain of PMX1.

t(2;11)(q31;p15)/treatment related leukaemia --> NUP98-HOXD13

Disease
So far, only 1 case of treatment related myelodysplasia evolving towards M6 acute non lymphocytic leukaemia.

Hybrid/Mutated gene
5' NUP98 - 3' HOXD13.

Abnormal protein
Fuses the GLFG repeat domains of NUP98 to the HOXD13 homeodomain.

t(4;11)(q21;p15.5)/T- acute lymphoblastic leukemia (ALL) --> NUP98-RAP1GDS1

Disease
3 cases of adult T-ALL.

Hybrid/Mutated gene
5' NUP98 - 3' RAP1GDS1.

Abnormal protein
Fuses the GLFG repeat domains of NUP98 to the entire coding region of RAP1GDS1. The product, rap1gds, has guanine nucleotide exchange factor activity.

t(5;11)(q35;p15.5)/ANLL--> NUP98-NSD1

Disease
ANLL. 5 cases reported to date. All were children or young adults (age range 3-18 years). Note that the t(5;11)(q35;p15.5) is not detectable by G-banding. Three cases were reported as cryptic t(5;11) associated with del(5q); a further two cases were identified in apparently normal karyotypes.

Hybrid/Mutated gene
5' NUP98 - 3' NSD1.

Abnormal protein
Fuses the GLFG repeat domains of NUP98 to the conserved SET, SAC and PHD finger domains of the NSD1 gene.

t(7;11)(p15;p15)/ANLL --> NUP98-HOXA9

Disease
M2-M4 ANLL mostly; occasionally: CML-like cases.

Prognosis
Mean survival: 15 mths.

Cytogenetics
Sole anomaly most often.

Hybrid/Mutated gene
5' NUP98 - 3' HOXA9.

Abnormal protein
Fuses the GLFG repeat domains of NUP98 to the HOXA9 homeobox.

t(9;11)(p22;p15.5)/ANLL--> NUP98-LEDGF

Disease
One case of de novo ANLL.

Hybrid/Mutated gene
5' NUP98 - 3' LEDGF.

Abnormal protein
Fuses the GLFG repeat domains of NUP98 to the COOH terminal of the LEDGF gene (encoding transcriptional activators p52 and p75).

t(11;12)(p15;q13)/treatment related leukemia (t-ANLL/MDS)

Disease
1 patient with t-MDS/ANLL.

Hybrid/Mutated gene
5'; NUP98 - 3' unknown.

t(11;17)(p15.5;q21) t-MDS/ANLL

Disease
1 patient with t-MDS/ANLL.

Hybrid/Mutated gene
5' NUP98 - 3' unknown.

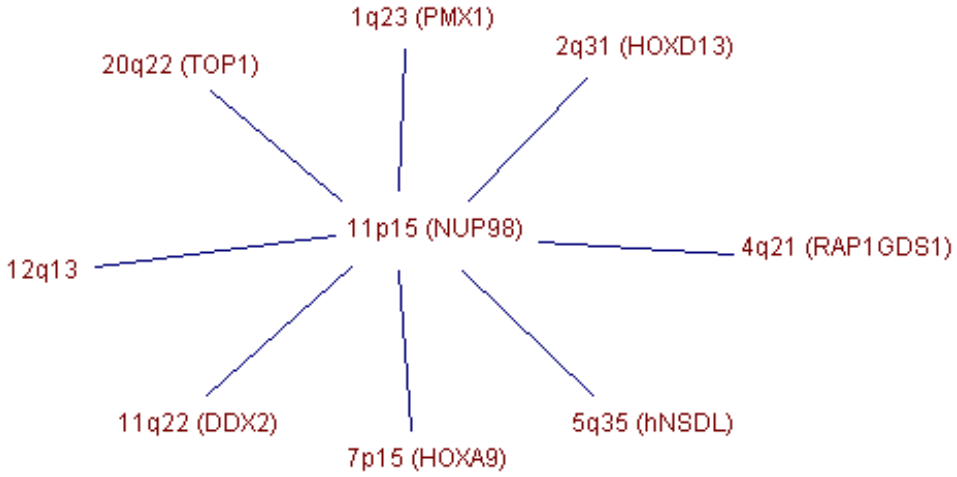
t(11;20)(p15.5;q11)/ANLL, t-MDS/ANLL--> NUP98-TOP1

Disease
ANLL, t-MDS/ANLL.

Hybrid/Mutated gene
5' NUP98 - 3' TOP1.

Abnormal protein
Fuses the GLFG repeat domains of NUP98 to the catalytic domain of TOP1.

Breakpoints



Nup98 and partners. Editor 03/2002

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