NF1 (neurofibromin 1)
Jean-Loup Huret

Identity
Location: 17q11.2

DNA/RNA

Description
60 exons; spans 350 kb; presence of 3 cryptic genes: OMGP, EVI2A, and EVI2B ('overlapping genes'), hidden within NF1 intron 27 with an opposite transcription direction.

Transcription
At least 4 alternate splicings; 9.0 mRNA complete cds; coding sequence: CDS 198..8717.

Protein

Description
The protein has been called neurofibromin; 2839 amino acids.

Expression
Is tissue and development stage specific.

Function
GTPase activating protein (GAP) interacting with p21RAS → tumour suppressor.

Homology
Other (GAP): IRA1 and 2, the yeast inhibitors of p21RAS.

Mutations

Germinal
Large deletions or insertions in 25% of cases, translocations and point mutations; widely dispersed, with no cluster: yielding difficulties in diagnosis; truncating effect in 2/3 of cases.

Somatic
The second allele remains normal in benign tumours and is often lost in malignant tumours another process in tumourigenesis may involve RNA editing (for the second allele), which gives rise to a truncated neurofibromin having lost its GAP activity.

Implicated in

Neurofibromatosis type 1
Disease
Autosomal dominant cancer prone disease; neurofibromatosis type 1 (NF1: the same symbol is used for the disease neurofibromatosis type 1 and the gene neurofibromin 1) is an hamartoneoplastic syndrome.

Watson syndrome
Disease
Autosomal dominant disease with cardiac malformations, and, as is found in von Recklinghausen neurofibromatosis, low normal intelligence, café-au-lait spots, and neurofibromas but to a lesser extend.

Oncogenesis
In accordance with the two-hit model for neoplasia, as is found in retinoblastoma.

References


This article should be referenced as such: Huret JL. NF1 (neurofibromin 1). Atlas Genet Cytogenet Oncol Haematol.1997;1(1):5-6.