t(7;15)(q22;q14) CUX1/NUTM1 a novel fusion

Ibrahima Ba, Wendy Cuccuini, Emmanuelle Clappier

Hematology Laboratory, APHP, Hôpital Saint-Louis, Paris, France. ibrahima.ba@aphp.fr; wendy.cuccuini@aphp.fr; emmanuelle.clappier@aphp.fr

Published in Atlas Database: December 2015
Online updated version: http://AtlasGeneticsOncology.org/Anomalies/t0715q22q14ID1272.html
Printable original version: http://documents.irevues.inist.fr/bitstream/handle/2042/66073/12-2015-t0715q22q14ID1272.pdf
DOI: 10.4267/2042/66073

This work is licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 2.0 France Licence.

© 2016 Atlas of Genetics and Cytogenetics in Oncology and Haematology

Abstract

A novel CUX1-NUTM1 fusion identified in B-cell precursor acute lymphoblastic leukemia.

Keywords

ALL-B; CUX1; NUTM; translocation

Clinics and pathology

Disease

B-cell precursor acute lymphoblastic leukemia (BCP-ALL)

Phenotype/cell stem origin

Pro-B immunophenotype (B-I EGIL classification): CD19+, CD22+, CD79a+, partial CD20+, CD10-, cμ- and aberrant expression of CD33.

Epidemiology

Only one case described, a 15-year-old female.

Cytogenetics

Cytogenetics morphological

Unbalanced t(7;15)
der(7)t(7;15)(q22;q14)dup(7)(q11q22)del(7)(p11)

Additional anomalies

There was no additional anomaly.

Genes involved and proteins

Note

Fusion CUX1-NUTM1
CUX1/NUTM1 a novel fusion

**CUX1 (cut-like homeobox 1)**

**Location**
7q22.1

**DNA/RNA**
CUX1 locus spans approximately 468 kb and contains 24 exons.

CUX1 has been reported as a haploinsufficient tumor suppressor gene on chromosome 7 frequently inactivated in acute myeloid leukemia (McNerney, 2013). It has also been involved in a gene fusion with FGFR1 (Wasag, 2011).

**Protein**
CUX1 is a 164 kDa nuclear protein. This protein is a member of the homeodomain family of DNA binding proteins. It may regulate gene expression, morphogenesis, and differentiation and it may also play a role in the cell cycle progression (Ramdzan ZM, 2014). Several different isoforms encoded by alternatively spliced transcript variants have been identified. [provided by RefSeq, Feb 2011].

**NUTM1 (nuclear protein in testis)**

**Location**
15q14

**DNA/RNA**
NUTM1 locus spans approximately 14 kb and contains 7 exons.

**Protein**
NUTM1 is a 120 kDa nuclear and cytoplasmic protein. Its function is still unknown.

**Result of the chromosomal anomaly**

**Hybrid gene**

**Note**
CUX1/NUTM1

**Description**
CUX1 exon 20 is fused in frame with NUTM1 exon 5.

**Transcript**
The CUX1-NUTM1 fusion transcript was amplified.

**References**

Wasag B, Lierman E, Meeus P, Cools J, Vandenberghe P. The kinase inhibitor TKI258 is active against the novel CUX1-FGFR1 fusion detected in a patient with T-lymphoblastic leukemia/lymphoma and t(7;8)(q22;p11).

Haematologica. 2011 Jun;96(6):922-6

This article should be referenced as such:


Atlas Genet Cytogenet Oncol Haematol. 2016; 20(9) 493