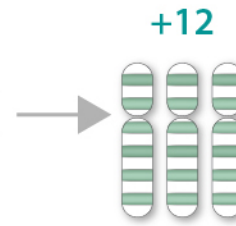


# The unique morphology, immunophenotype and cytogenetics of chronic lymphocytic leukemia (CLL) with +12

## Chromosomal abnormalities in CLLs

13q14 deletion	46%
<b>trisomy 12</b>	<b>20-25%</b>
11q23.3-q23.1 deletion	18%
17p13 deletion	12%



## Prognostic risk with +12

Median time for treatment: 33 months  
Median overall survival: 14 months

## Stereotype B-cell receptor prevalence

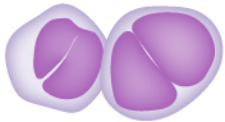
High prevalence of *IGHV* 4-39 gene  
*IGHV* 4-39\*01 (stereotype) > *IGHV* 1-3\*01

## Molecular abnormalities

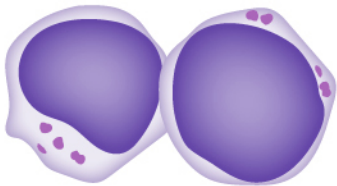
*TP53* mutations: rare  
*NOTCH1* mutations: frequent (30-40%)

## Morphological features

Cleaved nuclei



Lymphoplasmacytoid cells



**+12 chronic lymphocytic leukemia**

## Immunophenotype

**Immunophenotype panel:** CD5+, CD23+, FMC7-, surface immunoglobulin (slg)dim, CD22dim-, CD79bdim-

**High expression of:** CD19, CD22, CD20, CD79b, CD24, CD27, CD38, CD49d, slgM, slgk, slgλ

**Low expression of:** CD43

**Integrins:** CD11b, CD18, CD29, ITGB7

**Adhesion molecules:** CD25, CD54, CD95