

ZytoLight® SPEC TP53/ATM Dual Color Probe

ZytoLight® SPEC D13S319/13q34/CEN 12 Triple Color Probe

Background

The ZytoLight® SPEC TP53/ATM Dual Color Probe is designed for the detection of deletions affecting the genes TP53 and ATM, and the ZytoLight® SPEC D13S319/13q34/CEN 12 Triple Color Probe is designed for the detection of D13S319 deletions as well as for the enumeration of chromosome 12.

CLL (chronic lymphocytic leukemia) is the most common form of leukemia in Western population.

TP53 (tumor protein 53, a.k.a. p53) gene deletions have been detected in patients with CLL, multiple myeloma (MM), and acute myeloid leukemia (AML). In CLL patients, allelic loss of the short arm of chromosome 17 is associated with treatment failure with alkylating agents and short survival times.

The ATM (ataxia telangiectasia mutated) gene is located on 11q22.3 and encodes a protein kinase which is involved in cell cycle regulation, including TP53 activation. CLL patients with 11q deletion exhibit rapid disease progression and inferior survival. The most frequent aberration in CLL is the deletion of 13q14 which involves the D13S319 locus and which is associated with a favorable prognosis if occurring as the sole genetic aberration. Deletions of the long arm of chromosome 13 are also frequently detected in patients with aggressive non-Hodgkin lymphoma (NHL) and have been found to represent an adverse prognostic factor in MM.

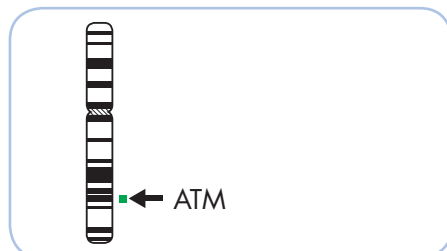
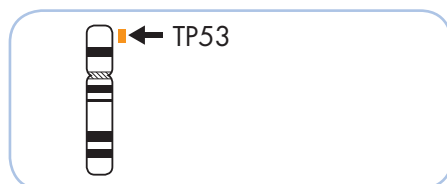
Trisomy 12 represents another frequent chromosomal aberration in CLL, detected in about 20% of CLL cases. Trisomy 12 as single aberration is associated with an intermediate prognostic outcome. Hence, in combination with further biological markers, morphology and clinical information FISH is a valuable tool to predict disease progression and overall survival.

References

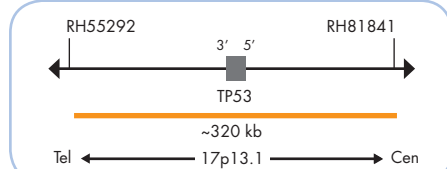
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- Dal Bo M, et al. (2011) Genes Chromosomes Cancer 50: 633-43.
- Ouillette P, et al. (2011) Clin Cancer Res 21: 6778-90.
- Pettitt AR, et al. (2001) Blood 98: 814-22.
- Ripollés L, et al. (2006) Cancer Genet Cytogenet 171: 57-64.
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Probe Description

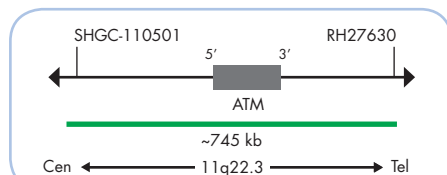
The SPEC TP53/ATM Dual Color Probe is a mixture of an orange fluorochrome direct labeled SPEC TP53 probe hybridizing to the TP53 gene in the chromosomal region 17p13.1 and a green fluorochrome direct labeled SPEC ATM probe specific for the ATM gene at 11q22.3.



Ideograms of chromosomes 17 (above) and 11 (below) indicating the hybridization locations.

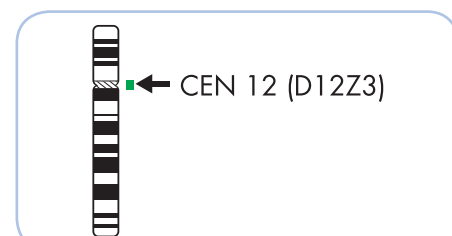


SPEC TP53 Probe map (not to scale).

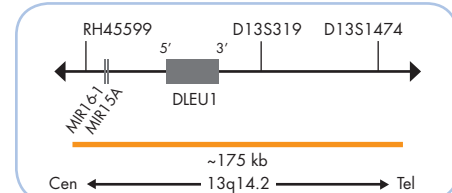


SPEC ATM Probe map (not to scale).

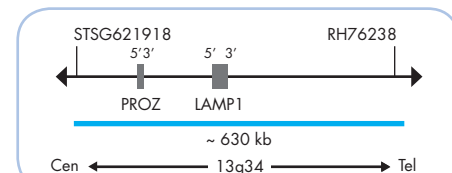
The SPEC D13S319/13q34/CEN 12 Triple Color Probe is a mixture of an orange fluorochrome direct labeled SPEC D13S319 probe specific for the D13S319 locus at 13q14.2, a blue fluorochrome direct labeled SPEC 13q34 probe specific for the chromosomal region 13q34 and a green fluorochrome direct labeled CEN 12 probe specific for the alpha satellite centromeric region of chromosome 12 (D12Z3). The SPEC 13q34 probe is specific for the LAMP1 (lysosome-associated membrane protein 1) gene region in 13q34. Due to cross-hybridizations of chromosome 13 alpha satellites to other centromeric regions, probes specific for 13q34 are frequently used for chromosome 13 copy number detection.



Ideograms of chromosomes 13 (above) and 12 (below) indicating the hybridization locations.



SPEC D13S319 Probe map (not to scale).

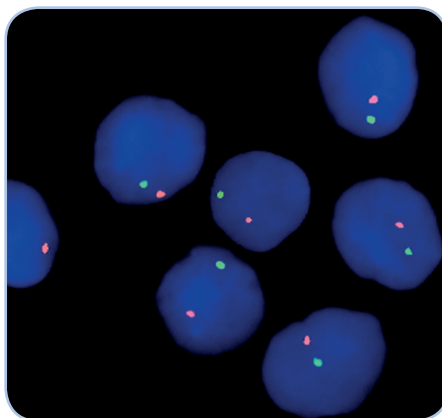


SPEC 13q34 Probe map (not to scale).

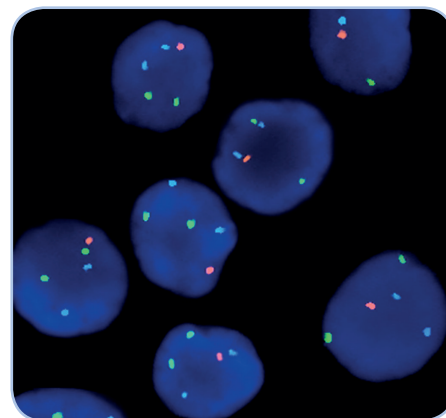
Results

Using the SPEC TP53/ATM Dual Color Probe in a normal interphase nucleus, two orange and two green signals are expected. In a cell with deletions affecting the TP53 gene locus, a reduced number of orange signals will be observed. Deletions affecting only parts of the TP53 locus might result in a normal signal pattern with orange signals of reduced size. In a cell with ATM gene deletions, a reduced number of green signals will be observed. Deletions affecting only parts of the ATM locus might result in a normal signal pattern with green signals of reduced size.

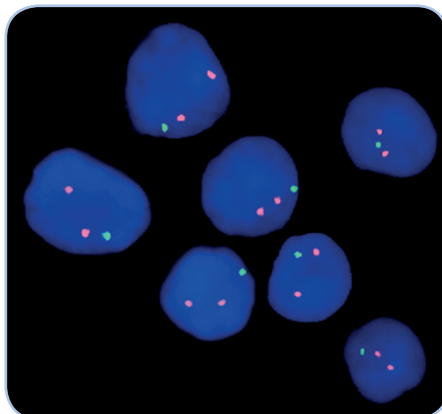
Using the SPEC D13S319/13q34/CEN 12 Triple Color Probe in a normal interphase nucleus, two orange, two green, and two blue signals are expected. In a cell with deletions affecting the D13S319 locus, a reduced number of orange signals will be observed. Deletions affecting only parts of the D13S319 locus might result in a normal signal pattern with orange signals of reduced size. In a cell with trisomy or polysomy 12, three or more copies of the green signal will be observed, respectively.



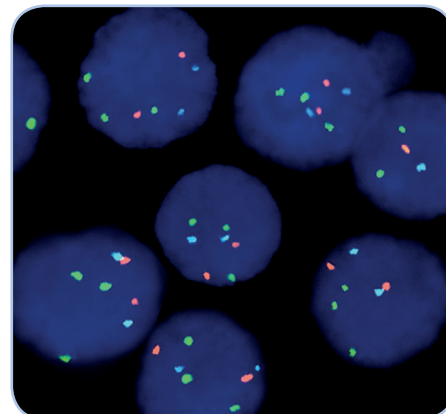
SPEC TP53/ATM Dual Color Probe hybridized to bone marrow biopsy section with deletions of the ATM and the TP53 genes as indicated by one green and one orange signal in each nucleus.



SPEC D13S319/13q34/CEN 12 Triple Color Probe hybridized to bone marrow biopsy section with deletion of the D13S319 locus as indicated by one orange signal and two blue signals in each nucleus.



SPEC TP53/ATM Dual Color Probe hybridized to bone marrow biopsy section with deletion of the ATM gene as indicated by one green signal in each nucleus.



SPEC D13S319/13q34/CEN 12 Triple Color Probe hybridized to bone marrow biopsy section with trisomy of chromosome 12 as indicated by three green signals in each nucleus.

Prod. No.	Product	Label	Tests* (Volume)
Z-2159-50	ZytoLight SPEC TP53/ATM Dual Color Probe CE IVD	●/●	5 (50 µl)
Z-2159-200	ZytoLight SPEC TP53/ATM Dual Color Probe CE IVD	●/●	20 (200 µl)
Z-2160-50	ZytoLight SPEC D13S319/13q34/CEN 12 Triple Color Probe CE IVD	●/●/●	5 (50 µl)
Z-2160-200	ZytoLight SPEC D13S319/13q34/CEN 12 Triple Color Probe CE IVD	●/●/●	20 (200 µl)
Related Products			
Z-2028-5	ZytoLight FISH-Tissue Implementation Kit CE IVD Incl. Heat Pretreatment Solution Citric, 150 ml; Pepsin Solution, 1 ml; Wash Buffer SSC, 150 ml; 25x Wash Buffer A, 50 ml; DAPI/DuraTest-Solution, 0.2 ml		5
Z-2028-20	ZytoLight FISH-Tissue Implementation Kit CE IVD Incl. Heat Pretreatment Solution Citric, 500 ml; Pepsin Solution, 4 ml; Wash Buffer SSC, 500 ml; 25x Wash Buffer A, 100 ml; DAPI/DuraTest-Solution, 0.8 ml		20
Z-2099-20	ZytoLight FISH-Cytology Implementation Kit CE IVD Incl. Cytology Pepsin Solution, 4 ml; 20x Wash Buffer TBS, 50 ml; 10x MgCl ₂ , 50 ml; 10x PBS, 50 ml; Cytology Stringency Wash Buffer SSC, 500 ml; Cytology Wash Buffer SSC, 500 ml; DAPI/DuraTest-Solution, 0.8 ml		20

* Using 10 µl probe solution per test. CE IVD only available in certain countries. All other countries research use only! Please contact your local dealer for more information.