

ZytoLight® SPEC ETV6/RUNX1 Dual Color Dual Fusion Probe



Background

The ZytoLight® SPEC ETV6/RUNX1 Dual Color Dual Fusion Probe is designed for the detection of the specific translocation involving the chromosomal region 12p13.2 harboring the ETV6 (ETS variant 6, a.k.a. TEL) gene and the chromosomal region 21q22.12 harboring the RUNX1 (runt related transcription factor 1, a.k.a. AML1) gene. The balanced chromosomal translocation t(12;21)(p13.2;q22.1), which leads to ETV6/RUNX1 fusion, represents the most frequent genetic rearrangement in initial childhood B-cell precursor (BCP) acute lymphoblastic leukemia (ALL) (19-27%) and has been associated with good prognosis. The ETV6/RUNX1 fusion protein, comprising a putative repressor domain of ETV6, a member of the ETS family of transcription factors, fused to RUNX1, the DNA-binding subunit of the RUNX1/CBF beta transcription factor complex, acts as a trans-dominant repressor of RUNX1 regulated target genes involved in hematopoiesis.

Three secondary aberrations in ETV6/RUNX1 positive ALL have been found to negatively influence the clinical course: deletion of the second non-translocated ETV6 allele, gains of the RUNX1 gene, and duplication of the derivative chromosome 21. Detection of t(12;21) by Fluorescence *in situ* Hybridization enables the simultaneous identification of the most common secondary changes and thus provides additional information about the possible outcome of the disease in patients with ALL.

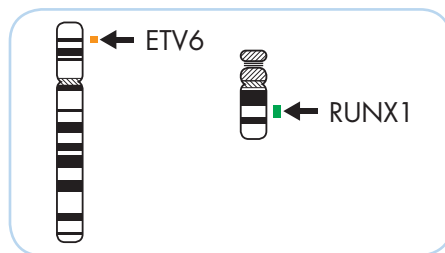
References

- Fenrick R, et al. (1999) Mol Cell Biol 19: 6566-74.
- Martinez-Ramirez A, et al. (2001) Haematologica 86: 1245-53.
- Morrow M, et al. (2007) Oncogene 26: 4404-14.
- Peter A, et al. (2009) Eur J Haematol 83: 420-32.
- Shurtleff SA, et al. (1995) Leukemia 9: 1985-9.

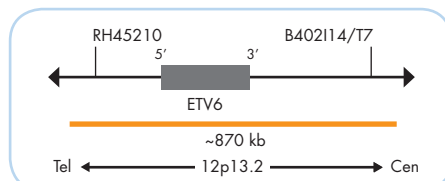
Probe Description

The ZytoLight® SPEC ETV6/RUNX1 Dual Color Dual Fusion Probe is composed of:

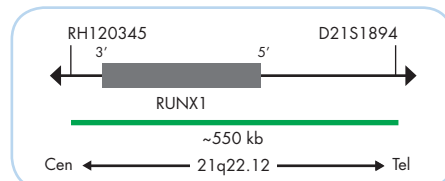
- ZyOrange (excitation 547 nm/emission 572 nm) labeled polynucleotides (~6 ng/µl), which target sequences mapping in 12p13.2** (chr12:11,586,400-12,454,330) harboring the ETV6 gene region.
- ZyGreen (excitation 503 nm/emission 528 nm) labeled polynucleotides (~12 ng/µl), which target sequences mapping in 21q22.12** (chr21:36,106,492-36,657,941) harboring the RUNX1 gene region.
- Formamide based hybridization buffer



Ideograms of chromosomes 12 (left) and 21 (right) indicating the hybridization locations.



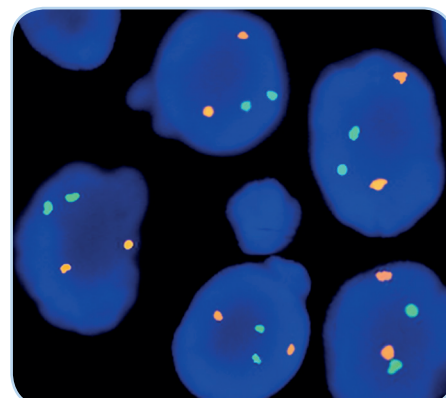
SPEC ETV6 Probe map (not to scale).



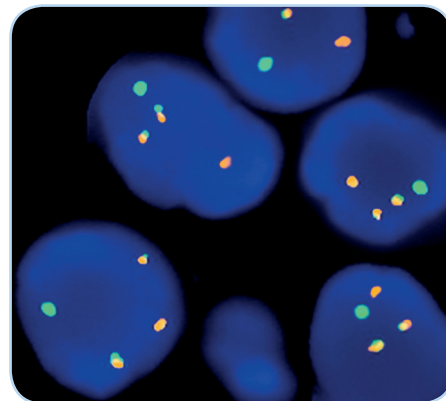
SPEC RUNX1 Probe map (not to scale).

Results

In a normal interphase nucleus, two orange and two green signals are expected. A reciprocal translocation involving two breakpoints splits the two signals and generates a fusion signal on each of the chromosomes involved. The chromosomal regions which are not translocated are indicated by the single orange and green signal, respectively.



SPEC ETV6/RUNX1 Dual Color Dual Fusion Probe hybridized to normal interphase cells as indicated by two orange and two green signals in each nucleus.



Bone marrow tissue section with translocation affecting the ETV6/RUNX1 loci as indicated by one separate orange signal, one separate green signal, and two orange/green fusion signals.

Prod. No.	Product	Label	Tests* (Volume)
Z-2157-50	ZytoLight SPEC ETV6/RUNX1 Dual Color Dual Fusion Probe CE IVD	●/●	5 (50 µl)
Z-2157-200	ZytoLight SPEC ETV6/RUNX1 Dual Color Dual Fusion 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, 210 ml; 25x Wash Buffer A, 50 ml; DAPI/DuraTect-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, 560 ml; 25x Wash Buffer A, 100 ml; DAPI/DuraTect-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/DuraTect-Solution, 0.8 ml		20

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

**According to Human Genome Assembly GRCh37/hg19