ZytoLight® SPEC CSF1R Dual Color Break Apart Probe

CE IVD

Background

The ZytoLight® SPEC CSF1R Dual Color Break Apart Probe is designed to detect rearrangements involving the chromosomal region 5q32 harboring the CSF1R (colony stimulating factor 1 receptor, a.k.a. FMS) gene.

The CSF1 receptor is activated by dimerization upon binding of its ligand CSF1 and is involved in macrophage development.

Rearrangement of the CSF1R gene was first detected in an acute megakaryoblastic leukemia (AMKL) cell line generating the RBM6-CSF1R fusion gene. A MEF2D-CSF1R fusion gene was described in a patient with primary pre-B cell acute lymphoblastic leukemia (pre-B ALL). Both fusion proteins contain the intact kinase domain of CSF1R.

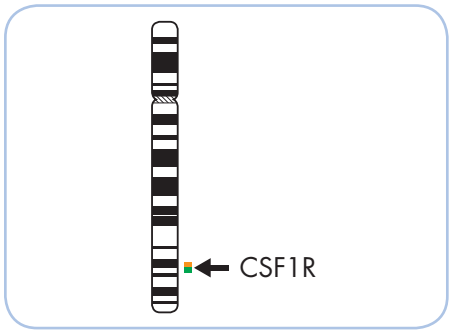
Philadelphia chromosome-like ALL (Ph-like ALL) is a subgroup of B-cell precursor ALL and is associated with a high risk of treatment failure. SSBP2-CSF1R fusions were detected in some patients with Ph-like ALL. They result from either the balanced translocation t(5;5)(q14;q32) or the duplication dup(5)(q14q32). Expression of this fusion gene results in cytokine-independent growth and enhanced STAT5 activation which are inhibited by dasatinib *in vitro*. CSF1R signaling was also shown to be suppressed by the ABL1 kinase inhibitor imatinib.

Hence, the detection of CSF1R rearrangements by FISH may help in selecting ALL patients eligible for treatment with CSF1R inhibitors.

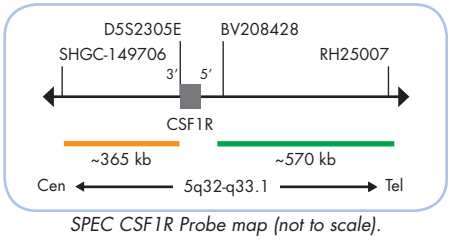
References
Dewar AL, et al. (2005) Blood 105: 3127-32.
Gu TL, et al. (2007) Blood 110: 323-33.
Lilljebjörn H, et al. (2014) Leukemia 28: 977-9.
Roberts KG, et al. (2014) N Engl J Med 371: 1005-15.
Schwab C, et al. (2014) Blood 124: 3773.

Probe Description

The SPEC CSF1R Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the 5q32-q33.1 band. The orange fluorochrome direct labeled probe hybridizes proximal to the CSF1R gene at 5q32, the green fluorochrome direct labeled probe hybridizes distal to the CSF1R gene at 5q32-q33.1.



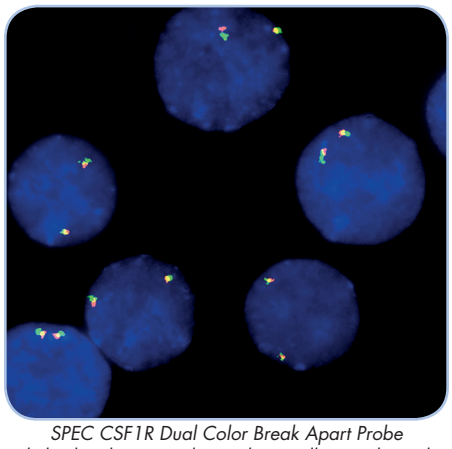
Ideogram of chromosome 5 indicating the hybridization locations.



SPEC CSF1R Probe map (not to scale).

Results

In an interphase nucleus of a normal cell lacking a translocation involving the 5q32-q33.1 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 5q32-q33.1 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 5q32-q33.1 locus and one 5q32-q33.1 locus affected by a translocation. Duplication of the 5q32 locus will result in additional orange signals.



SPEC CSF1R Dual Color Break Apart Probe hybridized to normal interphase cells as indicated by two orange/green fusion signals per nucleus.

Prod. No.	Product	Label	Tests* (Volume)
Z-2202-200	ZytoLight SPEC CSF1R Dual Color Break Apart Probe CE IVD	●/●	20 (200 µl)
Related Products			
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/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 MgCl2, 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. CE IVD only available in certain countries. All other countries research use only! Please contact your local dealer for more information.*

FE109-1-16

ZytoLight® FISH probes are direct labeled using the unique ZytoLight® *Direct Label System II* providing improved signal intensity. Advanced specificity of the single copy SPEC probes is obtained by the unique ZytoVision® *Repeat Subtraction Technique.*

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