ZytoLight® SPEC ABL1 Dual Color Break Apart Probe

CE IVD

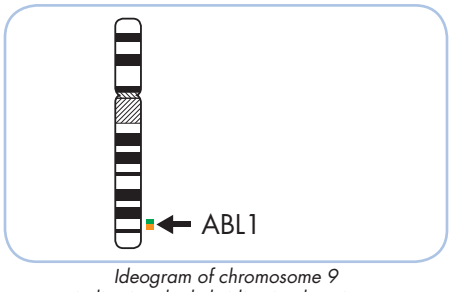
Background

The ZytoLight® SPEC ABL1 Dual Color Break Apart Probe is designed to detect rearrangements involving the chromosomal region 9q34.12 harboring the ABL1 (ABL proto-oncogene 1, non-receptor tyrosine kinase, a.k.a. ABL) gene.
Chromosomal rearrangements involving ABL1 occur in various hematological malignancies leading to fusions of the ABL1 gene to different fusion partners.
The translocation t(9;22)(q34.1;q11.2) results in BCR/ABL1 fusion and is observed in approx. 90% of patients with chronic myeloid leukemia (CML) and in approx. 25% of adults with acute lymphoblastic leukemia (ALL). The rearrangements are cytogenetically characterized by the presence of the Philadelphia (Ph) chromosome.
Other ABL1 fusion partners include, e.g., ETV6 and NUP214. The kinase domain of ABL1 is retained in all chimeric proteins.
The NUP214-ABL1 is the second most prevalent ABL1 fusion gene in malignant hemopathies, with a frequency of 5% in T-cell ALL. NUP214-ABL1 fusion genes are often found amplified on episomes.
Tyrosine kinase inhibitors, such as imatinib, suppress the constitutive kinase activity of ABL1 fusion proteins. Therefore, these drugs may have potential in the treatment of patients with ABL1 fusions.

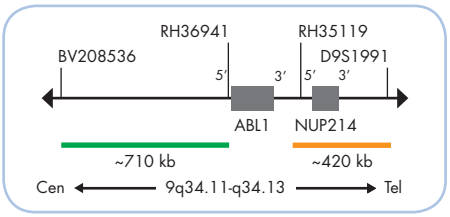
References
De Braekeleer E, et al. (2011) Eur J Haematol 86: 361-71.
De Klein A, et al. (1982) Nature 300: 765-7.
Graux C, et al. (2009) Leukemia 23: 125-33.
Lim TH, et al. (2005) Ann Acad Med Singapore 34: 533-8.
Primo D, et al. (2003) Leukemia 17: 1124-9.
Rieder H, et al. (1998) Leukemia 12: 1473-81.
Sessarego M, et al. (2000) Haematologica 85: 35-9.
Zheng X, et al. (2009) PLoS One 4: e7661.

Probe Description

The SPEC ABL1 Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the 9q34.11-q34.13 band. The green fluorochrome direct labeled probe hybridizes proximal to the ABL1 gene at 9q34.11-q34.12, the orange fluorochrome direct labeled probe hybridizes distal to the ABL1 gene at 9q34.12-q34.13.



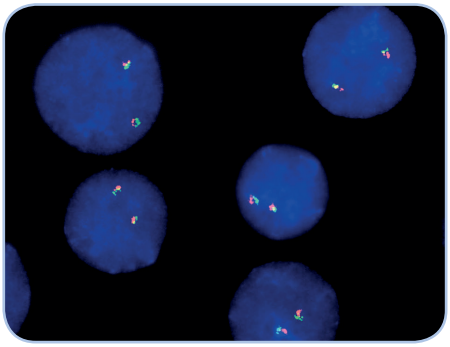
Ideogram of chromosome 9 indicating the hybridization locations.



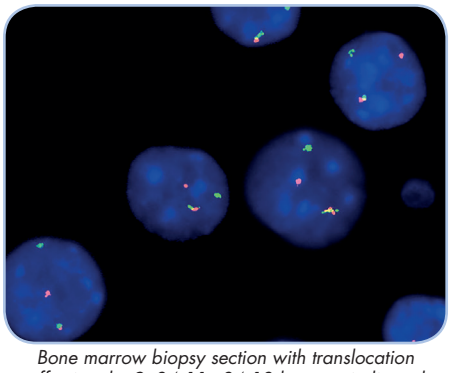
SPEC ABL1 Probe map (not to scale).

Results

In an interphase nucleus of a normal cell lacking a translocation involving the 9q34.11-q34.13 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 9q34.11-q34.13 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 9q34.11-q34.13 locus and one 9q34.11-q34.13 locus affected by a translocation. Amplifications of the NUP214-ABL1 fusion genes will result in multiple orange signals or orange signal clusters.



SPEC ABL1 Dual Color Break Apart Probe hybridized to normal interphase cells as indicated by two orange/green fusion signals per nucleus.



Bone marrow biopsy section with translocation affecting the 9q34.11-q34.13 locus as indicated by one non-rearranged orange/green fusion signal, one orange signal, and one separate green signal indicating the translocation.

Prod. No.	Product	Label	Tests* (Volume)
Z-2199-200	ZytoLight SPEC ABL1 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.*

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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