ZytoLight® SPEC SPI1 Dual Color Break Apart Probe

CE IVD

Background

The ZytoLight® SPEC SPI1 Dual Color Break Apart Probe is designed to detect rearrangements involving the chromosomal region 11p11.2 harboring the SPI1 (Spi-1 proto-oncogene, a.k.a. PU.1, SPI-A) gene.

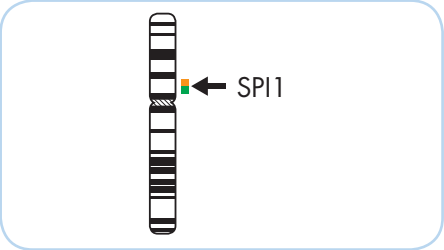
SPI1 is a member of the ETS family of transcription factors and is essential for the normal development of hematopoietic stem cells. SPI1 rearrangements were detected in some pediatric T-cell acute lymphoblastic leukemia (T-ALL) cases resulting in the fusion of the N-terminal region of the fusion partner (STMN1, TCF7, or BCL11B) to the C-terminal DNA binding ETS domain of the SPI1 protein. Hence, the resulting fusion proteins retain the transcriptional activity inherent to SPI1. SPI1 fusion positive cases show markedly elevated SPI1 expression, most likely because the fusion gene comes under the transcriptional control of the heterologous promoter of the respective partner gene. Overexpression of SPI1 is thought to contribute to T-cell leukemogenesis. Moreover, T-ALL patients with SPI1 fusion show a uniformly poor overall survival and seem to be incurable with current standard chemotherapy. This underscores the importance of detecting this subset of patients by FISH so that they may receive more intensive or alternative therapies.

References
Homminga I, et al. (2011) Cancer Cell 19: 484-97.
Liu Y, et al. (2017) Nat Genet 49: 1211-8.
Seki M, et al. (2017) Nat Genet 49: 1274-81.

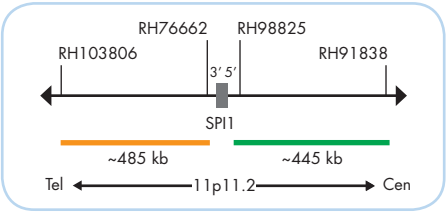
Probe Description

The ZytoLight® SPEC SPI1 Dual Color Break Apart Probe is composed of:

- ZyGreen (excitation 503 nm/emission 528 nm) labeled polynucleotides (~10.0 ng/µl), which target sequences mapping in 11p11.2** (chr11:47,424,117-47,867,019) proximal to the SPI1 breakpoint region.
- ZyOrange (excitation 547 nm/emission 572 nm) labeled polynucleotides (~4.5 ng/µl), which target sequences mapping in 11p11.2** (chr11:46,871,411-47,354,083) distal to the SPI1 breakpoint region.
- Formamide based hybridization buffer



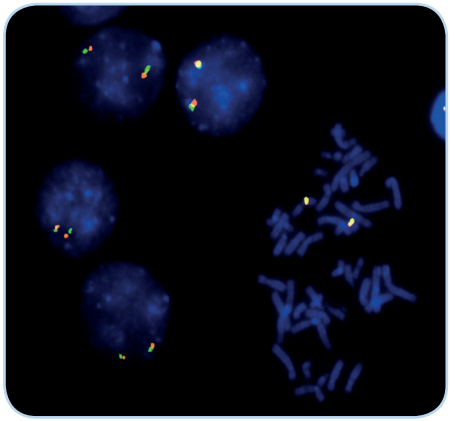
Ideogram of chromosome 11 indicating the hybridization locations.



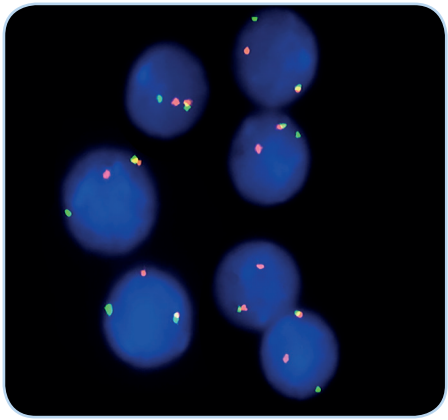
SPEC SPI1 Probe map (not to scale).

Results

In an interphase nucleus of a normal cell lacking a translocation involving the 11p11.2 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 11p11.2 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 11p11.2 locus and one 11p11.2 locus affected by a translocation.



SPEC SPI1 Dual Color Break Apart Probe hybridized to normal interphase cells as indicated by two orange/green fusion signals in each nucleus and to metaphase chromosomes of a normal cell.



Bone marrow smear with translocation of the SPI1 gene as indicated by one non-rearranged orange/green fusion signal, one orange and one separate green signal.

Prod. No.	Product	Label	Tests* (Volume)
Z-2291-50	ZytoLight SPEC SPI1 Dual Color Break Apart Probe CE IVD	●/●	5 (50 µl)
Related Products			
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*