ZytoLight® SPEC CREBBP Dual Color Break Apart Probe

CE IVD

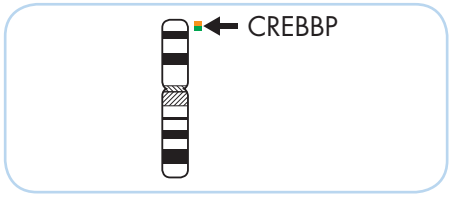
Background

The ZytoLight® SPEC CREBBP Dual Color Break Apart Probe is designed for the detection of translocations involving the chromosomal region 16p13.3 harboring the CREBBP (CREB binding protein, a.k.a. CBP, RTS) gene. The CREBBP protein regulates transcription by means of histone acetyltransferase activity and by binding to several proteins with key cell cycle functions, such as p53 and NFκB. Rearrangements of the CREBBP gene have been observed in several hematologic malignancies. Three different fusion partners have been described so far. KMT2A (a.k.a. MLL) is fused to CREBBP in therapy-related acute myeloid (AML) or lymphoid leukemia (ALL) and myelodysplastic syndrome (MDS) with t(11;16)(q23.3;p13.3). The translocation t(10;16)(q22.2;p13.3) was reported in some AML cases and fuses KAT6B (a.k.a. MORF) to CREBBP. CREBBP is also rearranged with KAT6A (a.k.a. MOZ) in *de novo* and therapy-related AML with t(8;16)(p11.2;p13.3) after treatment with topoisomerase II inhibitors. This rearrangement is associated with an infrequent but well-defined type of AML that has characteristic morphocytochemical features. The prognosis is usually extremely poor, with a median survival of two months.
The KAT6A/CREBBP AML tends to develop within two years of adjuvant chemotherapy, especially in former breast cancer patients.
Thus, FISH analysis for the detection of CREBBP translocation may serve as a diagnostic tool to identify cases with hematologic malignancies with an aggressive presentation.

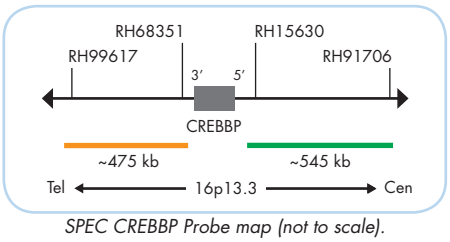
Probe Description

The ZytoLight® SPEC CREBBP 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 16p13.3** (chr16:3,978,217-4,521,684) proximal to the CREBBP breakpoint region.
- ZyOrange (excitation 547 nm/emission 572 nm) labeled polynucleotides (~4.5 ng/µl), which target sequences mapping in 16p13.3** (chr16:3,287,067-3,762,188) distal to the CREBBP breakpoint region.
- Formamide based hybridization buffer



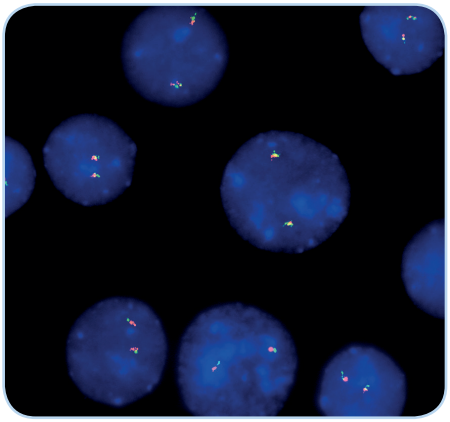
Ideogram of chromosome 16 indicating the hybridization locations.



SPEC CREBBP Probe map (not to scale).

Results

In an interphase nucleus lacking a translocation involving the 16p13.3 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 16p13.3 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 16p13.3 locus and one 16p13.3 locus affected by a translocation.



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

References
Borrow J, et al. (1996) Nat Genet 14: 33-41.
Camós M, et al. (2006) Cancer Res 66: 6947-54.
Gupta A, et al. (2014) Case Rep Oncol Med 2014: 361748.
Rozman M, et al. (2004) Genes Chromosomes Cancer 40: 140-5.
Taki T, et al. (1997) Blood 89: 3945-50.
Vizmanos JL, et al. (2003) Genes Chromosomes Cancer 36: 402-5.

Prod. No.	Product	Label	Tests* (Volume)
Z-2267-50	ZytoLight SPEC CREBBP 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*