

ZytoLight® SPEC BRAF Dual Color Break Apart Probe

Background

The ZytoLight® SPEC BRAF Dual Color Break Apart Probe is designed for the detection of rearrangements involving the chromosomal region 7q34 harboring the BRAF (B-Raf proto-oncogene, serine/threonine kinase, a.k.a. BRAF1, NS7) gene. The BRAF gene encodes a protein-serine/threonine kinase that participates in the MAPK cascade, which regulates a large variety of cell processes.

Various BRAF translocations were observed in melanocytic nevi, pilocytic astrocytomas, malignant melanoma, prostate and gastric cancer. The AKAP9-BRAF fusion resulting from paracentric inversion of chromosome 7q was found in radiation-induced papillary thyroid carcinomas. The fusion proteins contain the protein kinase domain but lack the autoinhibitory N-terminal portion of BRAF resulting in constitutive kinase activity.

In addition, in pilocytic astrocytoma the FAM131B-BRAF fusion has been described resulting from interstitial deletion which removes the BRAF N-terminal inhibitory domain. Moreover, pancreatic acinar cell carcinoma - a rare subtype of pancreatic cancer with poor prognosis - shows a recurrent SND1-BRAF rearrangement. SND1-BRAF-transformed cells were shown to be sensitive to treatment with a MEK inhibitor.

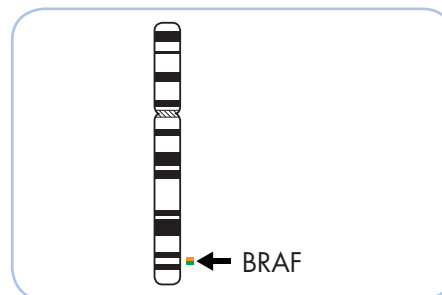
Hence, the detection of BRAF rearrangements by Fluorescence *in situ* Hybridization may represent a novel therapeutic target in various diseases.

References

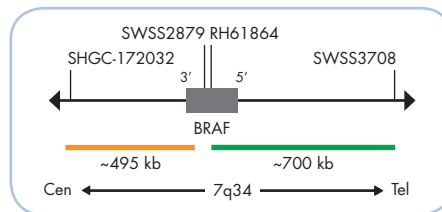
- Chmielecki J, et al. (2014) Cancer Discov 4: 1398-405.
- Ciampi R, et al. (2005) J Clin Invest 115: 94-101.
- Cin H, et al. (2011) Acta Neuropathol 121: 763-74.
- Dessars B, et al. (2007) J Invest Dermatol 127: 1468-70.
- Dougherty MJ, et al. (2010) Neuro Oncol 12: 621-30.
- Hutchinson KE, et al. (2013) Clin Cancer Res 19: 6696-702.
- Jones DT, et al. (2013) Nat Genet 45: 927-32.
- Miller VA, et al. (2014) J Clin Oncol 32 Suppl: Abstr. 11029.
- Palanisamy N, et al. (2010) Nat Med 16: 793-8.

Probe Description

The SPEC BRAF Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the 7q34 band. The orange fluorochrome direct labeled probe hybridizes proximal, and the green fluorochrome direct labeled probe hybridizes distal to the BRAF gene breakpoint region.



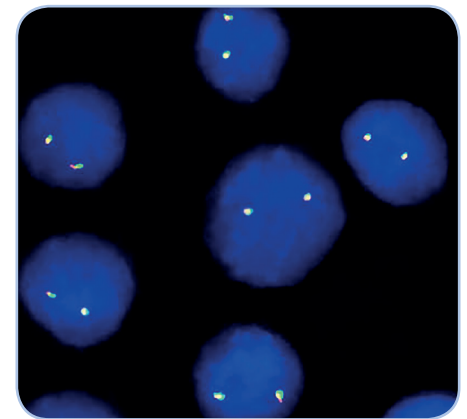
Ideogram of chromosome 7 indicating the hybridization locations.



SPEC BRAF Probe map (not to scale).

Results

In an interphase nucleus lacking a rearrangement involving the 7q34 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 7q34 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 7q34 locus and one 7q34 locus affected by a translocation or inversion. Isolated orange signals are the result of deletions distal to the BRAF breakpoint region.



SPEC BRAF 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-2189-200	ZytoLight SPEC BRAF Dual Color Break Apart Probe CE IVD	●/●	20 (200 µl)

Related Products

Z-2028-20	ZytoLight FISH-Tissue Implementation Kit CE IVD		20
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			

* 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.