

ZytoLight® SPEC FGFR1 Dual Color Break Apart Probe

Background

The ZytoLight® SPEC FGFR1 Dual Color Break Apart Probe is designed to detect rearrangements involving the chromosomal region 8p11.23-p11.22 harboring the FGFR1 (fibroblast growth factor receptor 1, a.k.a. FLT2 and FLG) gene. Translocations affecting FGFR1 are hallmarks of the 8p11 myeloproliferative syndrome (EMS), also known as stem cell leukemia/lymphoma syndrome, an aggressive stem cell myeloproliferative neoplasm that is associated with eosinophilia, poor prognosis, T-cell lymphoma, and frequent progression to acute myeloid leukemia.

The most common translocation detected in EMS is t(8;13)(p11.2;q12.1) fusing FGFR1 to ZMYM2 (a.k.a. ZNF198).

Several other rearrangements affecting the FGFR1 locus are also common in EMS, all of which result in fusion proteins comprising the tyrosine kinase domain of FGFR1 and a dimerization domain of a partner protein. Due to dimerization these fusion proteins show constitutive kinase activity. Currently, bone marrow or stem cell transplantation is the only curative treatment for patients with EMS. *In vitro* studies suggest that certain receptor tyrosine kinase inhibitors may provide a new therapeutic option.

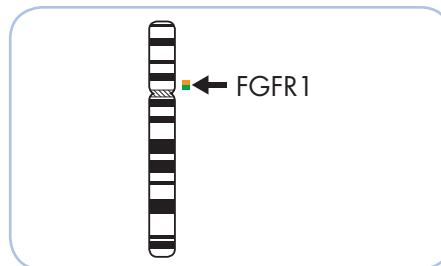
Detection of FGFR1 rearrangements using FISH may assist in the diagnosis of patients with this aggressive stem cell disorder.

References

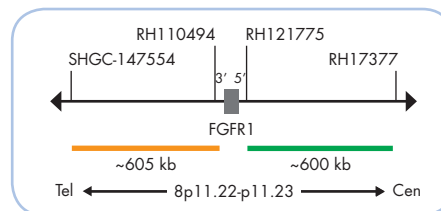
- Chase A, et al. (2007) Blood 110: 3729-34.
- Chase A, et al. (2013) Haematologica 98: 103-6.
- Jackson CC, et al. (2010) Hum Pathol 41: 461-76.
- Sohal J, et al. (2001) Genes Chromosomes Cancer 32: 155-63.

Probe Description

The SPEC FGFR1 Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the 8p11.23-p11.22 band. The orange fluorochrome direct labeled probe hybridizes distal, the green fluorochrome direct labeled probe hybridizes proximal to the FGFR1 gene breakpoint region at 8p11.23-p11.22.



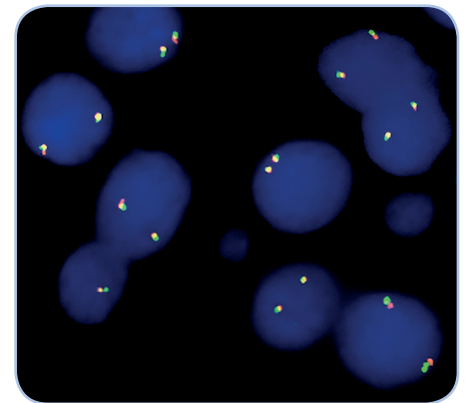
Ideogram of chromosome 8 indicating the hybridization locations.



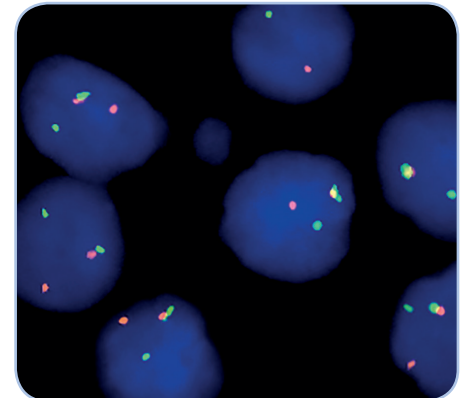
SPEC FGFR1 Probe map (not to scale).

Results

In an interphase nucleus of a normal cell lacking a translocation involving the 8p11.23-p11.22 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 8p11.23-p11.22 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 8p11.23-p11.22 locus and one 8p11.23-p11.22 locus affected by a translocation.



SPEC FGFR1 Dual Color Break Apart Probe hybridized to normal interphase cells as indicated by two orange/green fusion signals per nucleus.



8p11 myeloproliferative syndrome (EMS) tissue section with translocation of the FGFR1 gene as indicated by one non-rearranged orange/green fusion signal, one orange, and one separate green signal indicating the translocation.

Prod. No.	Product	Label	Tests* (Volume)
Z-2168-200	ZytoLight SPEC FGFR1 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 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. CE IVD only available in certain countries. All other countries research use only! Please contact your local dealer for more information.