MYC Break Apart DNA-FISH Probe

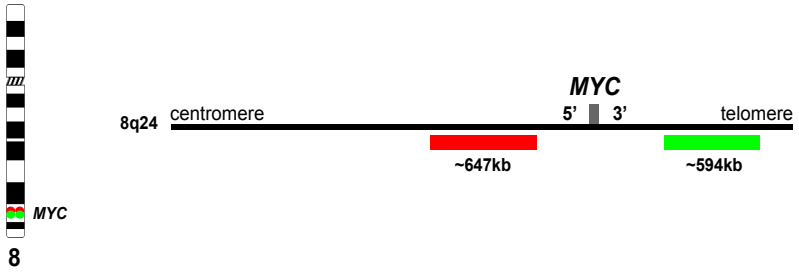
Two Color, Break Apart Probe CE

Ref: 13-008

MYC Break Apart

Intended Use

The *MYC* Break Apart DNA-FISH Probe is designed to detect the translocation between the *MYC* gene located at 8q24 and one of 11 known translocation partner loci using fluorescence *in situ* hybridization (FISH). The most common translocation, t(8;14)(q24;q32), is found in 75-85% of Burkitt lymphoma (BL) cases and is the cytogenetic hallmark of BL.[1,2] The t(8;14)(q24;q32) in BL is associated with an aggressive clinical course that responds well to high-intensity, brief-duration drug regimens with an overall favorable outcome.[2,3] Translocation of *MYC* is often detected as a secondary genomic abnormality at low frequencies in high-grade B-cell lymphomas, such as diffuse large B-cell lymphoma (DLBCL) (5-16%) and chronic lymphocytic leukemia (CLL) (0.1-2%).[1,3-5] In DLBCL, the presence of *MYC* translocation is associated with an aggressive disease with a poor prognosis and an unfavorable outcome.[4] *MYC* translocation has also been observed in 4-6% of acute lymphoblastic leukemia (ALL).[6]



Schematic of the *MYC* Break Apart DNA-FISH Probe:

Horizontal red and green bars indicate the regions covered by the probes (approximate to scale, GRCh37/Hg19/2009). The directly labeled 5'*MYC* (red) and 3'*MYC* (green) probes flank the most common breakpoint within the *MYC* gene.

Signal Interpretation

In normal diploid metaphase and interphase nucleus, two fusion signals (red/green or yellow) would be observed corresponding to the normal homologous chromosome 8 (Figures 1 and 2). In cells with chromosomal rearrangements involving the *MYC* gene, the most commonly observed pattern is one fusion signal (red/green or yellow), which represents the normal chromosome 8, and one red and one green signal, which represents the derivative chromosomes (Figure 3). It is recommended to confirm variant pattern or atypical signal patterns by metaphase analysis whenever possible.

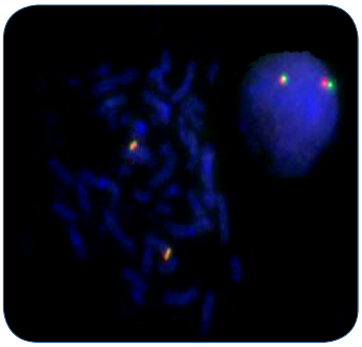


Figure 1: Normal diploid metaphase and interphase nucleus (from normal peripheral blood specimen) with 2 fusion (red/green or yellow) signals.

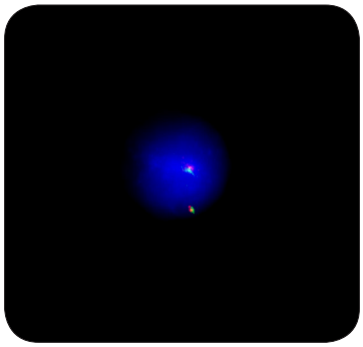


Figure 2: Normal diploid interphase nucleus (from bone marrow specimen) with 2 fusion (red/green or yellow) signals.

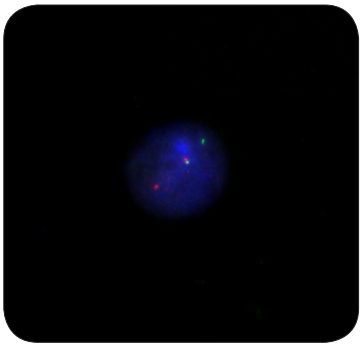


Figure 3: Interphase nucleus with 1 fusion (red/green or yellow), 1 red (5' *MYC*), and 1 green (3' *MYC*) signals.

References

1. Heim, S., Mitelman, F. (Ed) Cancer Cytogenetics, 2009 (3rd Edition). Wilwy-Blackwell, New Jersey. p. 326-328.
2. Blum, K. A., et al. Blood, 2004. 104(10): p. 3009-20.
3. Lones, M. A., et al. J Pediatr Hematol Oncol, 2004. 26(3): p. 169-78.
4. Snuderl, M., et al. Am J Surg Pathol, 2010. 34(3): p. 327-40.
5. Aukema, S.M., et al., Blood, 2011. 17(8): p. 2319-31.
6. Moorman, A. V., et al. Blood, 2010. 115(2): p. 206-14.

Fluorescence Microscopy Filter Requirements

Fluorophore	Excitation $_{max}$	Emission $_{max}$
Green	496 nm	520 nm
Red	580 nm	603 nm
DAPI	360 nm	460 nm

Instructions for use are available at www.cancergeneticsitalia.com

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