ITALIA

Empowering Personalized Cancer Treatment

MYC/IGH DNA-FISH Probe

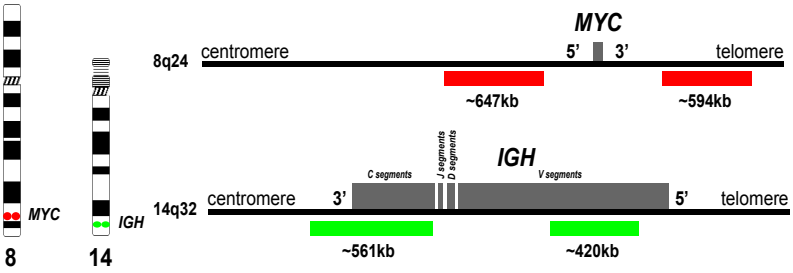
Two Color, Two Fusion Translocation Probe CE

Ref: 13-004

MYC/IGH

Intended Use

The *IGH/MYC* DNA-FISH Probe is designed to detect the translocation between the *MYC* gene located at 8q24 and the *IGH* gene located at 14q32, using fluorescence *in situ* hybridization (FISH). The translocation between the *MYC* and *IGH* gene is designated as t(8;14)(q24;q32) and is the cytogenetic hallmark of Burkitt lymphoma (BL), which is found in 75-85% of patients.[1] In BL, t(8;14)(q24;q32) is associated with an aggressive clinical course that responds well to high-intensity, brief-duration drug regimens with an overall favorable outcome.[1,2] This rearrangement has been observed at lower frequencies in other non-Hodgkin lymphomas (NHLs), such as diffuse large B-cell lymphoma (DLBCL) (<10%).[3,4] t(8;14) also occurs less frequently in acute lymphoblastic leukemia (ALL) where it has been associated with an unfavorable outcome.[3,5]



Schematic of the *MYC/IGH* DNA-FISH Probe:

Horizontal red and green bars indicate the regions covered by the probes (approximate to scale, GRCh37/Hg19/2009). The directly labeled *MYC* (red) & *IGH* (green) probes flank the breakpoints in the *MYC* & *IGH* loci, respectively.

Signal Interpretation

In normal diploid metaphase and interphase nucleus, two red and two green signals would be observed corresponding to the two normal homologous chromosomes 8 and 14, respectively (Figures 1 and 2). Upon translocation, the most commonly observed pattern is a single red and green signal, representing the normal chromosomes 8 and 14, and two fusion signals (red/green or yellow) which represent the translocated 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 red (*MYC*) and 2 green (*IGH*) signals.

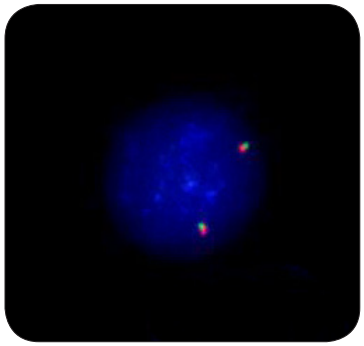


Figure 2: Normal diploid interphase nucleus (from bone marrow specimen) with 2 red (*MYC*) and 2 green (*IGH*) signals.

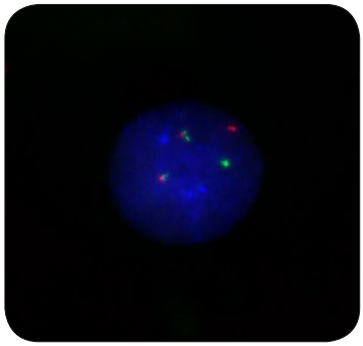


Figure 3: Interphase nucleus with 1 red (*MYC*), 1 green (*IGH*), and 2 fusion (red/green or yellow) signals.

References

1. Blum, K. A., et al. Blood, 2004. 104(10): p.3009-20.
2. Lones, M. A., et al. J Pediatr Hematol Oncol, 2004. 26(3): p.169-78.
3. Heim, S., et al. Cancer Cytogenetics, 2009 (3rd Edition).
4. Akasaka, T., et al. J Clin Oncol, 2000. 18(3): p.510-18.
5. 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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