

ZytoLight® SPEC MAFB/IGH Dual Color Dual Fusion Probe



Background

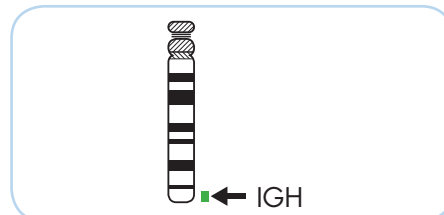
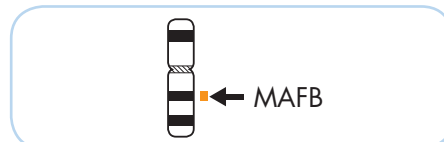
The ZytoLight® SPEC MAFB/IGH Dual Color Dual Fusion Probe is designed to detect the translocations affecting the MAFB gene in the chromosomal region 20q12 and the IGH locus in 14q32.33. The translocation t(14;20)(q32.3;q12) is frequently found in multiple myeloma (MM). MM is a low proliferative, malignant post-germinal center tumor of somatically mutated, isotype-switched plasma cells that accumulate in the bone marrow. It is often preceded by a premalignant state known as monoclonal gammopathy of undetermined significance (MGUS). Five recurrent primary translocations involving the immunoglobulin heavy locus (IGH) have been identified in 40% of MGUS and MM tumors. They include t(11;14)(q13.3;q32.3), t(6;14)(p21.1;q32.3), t(4;14)(p16.3;q32.3), t(14;16)(q32.3;q23), and t(14;20)(q32.3;q12), which involve the genes CCND1, CCND3, FGFR3 and NSD2, MAF, and MAFB, respectively. All of these translocations lead to the deregulation and overexpression of the target genes as a consequence of their juxtaposition to regulatory sequences of the IGH locus. The t(14;20) occurs in approximately 1-2% of MM patients and is associated with an adverse prognosis. Thus, currently, detection of t(14;20) by FISH is a reliable prognostic tool and may sustain therapeutic decision making in MM.

References
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 Fabris S, et al. (2005) Genes Chromosomes Cancer 42: 117-27.
 Fonseca R, et al. (2009) Leukemia 23: 2210-21.
 Gabrea A, et al. (2006) DNA Repair (Amst) 5: 1225-33.
 Hanamura I, et al. (2001) Jpn N Cancer Res 92: 638-44.

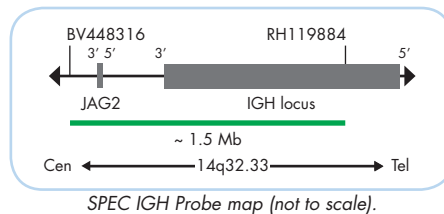
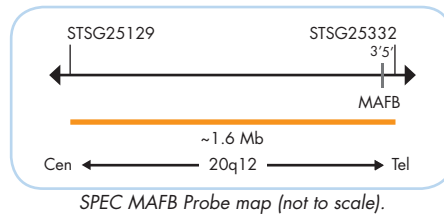
Probe Description

The ZytoLight® SPEC MAFB/IGH Dual Color Dual Fusion Probe is composed of:

- ZyOrange (excitation 547 nm/emission 572 nm) labeled polynucleotides (~6.0 ng/µl), which target sequences mapping in 20q12** (chr20:37,782,012-39,385,613) harboring the MAFB gene region.
- ZyGreen (excitation 503 nm/emission 528 nm) labeled polynucleotides (~12.0 ng/µl), which target sequences mapping in 14q32.33** (chr14:105,462,169-106,995,000) harboring the IGH locus.
- Formamid based hybridization buffer

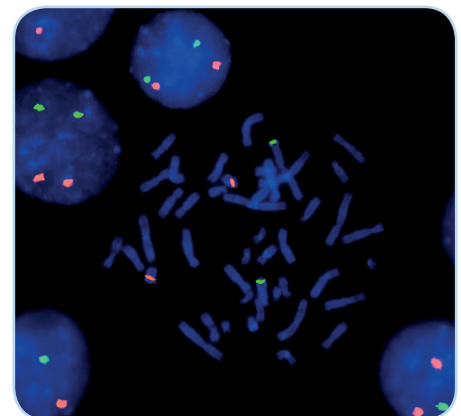


Ideograms of chromosome 20 (above) and 14 (below) indicating the hybridization locations.

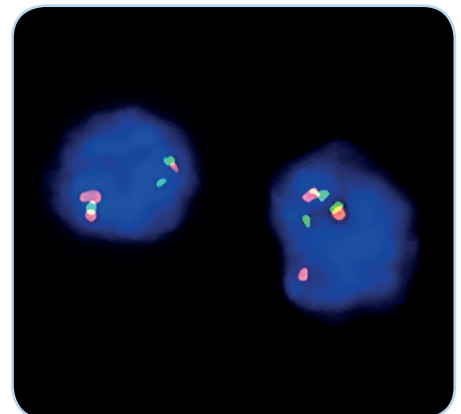


Results

In a normal interphase nucleus, two orange and two green signals are expected. A reciprocal translocation involving two breakpoints splits the two signals and generates a fusion signal on each of the chromosomes involved. The chromosomal regions which are not translocated are indicated by the single orange and green signal, respectively.



SPEC MAFB/IGH Dual Color Dual Fusion Probe hybridized to normal interphase cells as indicated by two orange and two green signals in each nucleus and to metaphase chromosomes of a normal cell.



Bone marrow CD138+ cells with translocation affecting the MAFB/IGH loci as indicated by two orange/green fusion signals, a single orange, and a separate green signal in each nucleus.

Kindly provided by Prof. Dr. Oskar A. Haas, Vienna, Austria.

Prod. No.	Product	Label	Tests* (Volume)
Z-2271-50	ZytoLight SPEC MAFB/IGH Dual Color Dual Fusion Probe	●/●	5 (50 µl)
Products			
Z-2099-20	ZytoLight FISH-Cytology Implementation Kit 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. 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