Background
The ZytoLight® SPEC MAF/IGH Dual Color Dual Fusion Probe is designed to detect the translocations affecting the MAF gene in the chromosomal region 16q23.2 and the IGH locus in 14q32.33. The translocation t(14;16)(q32.3;q23) is frequently found in multiple myeloma (MM).

MM is a 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 gamopathy 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(1;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 dysregulation and overexpression of the target genes as a consequence of their juxtaposition to regulatory sequences of the IGH locus. t(14;16) occurs in approximately 5% of MM patients and is associated with a more aggressive clinical outcome. The 16q23 breakpoints have been found to be scattered 550-1280 kb centromerically to the MAF gene within the WWOX gene. Hence, detection of t(14;16) by FISH represents a useful prognostic tool and may aid in therapeutic decision making in MM.

Probe Description
The SPEC MAF/IGH Dual Color Dual Fusion Probe is a mixture of an orange fluorochrome direct labeled MAF probe spanning the known MAF breakpoints, and a green fluorochrome direct labeled IGH probe spanning the known breakpoints of IGH.

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.

References

ZytoVision GmbH · Fischkai 1
27572 Bremerhaven · Germany
www.zytovision.com

* 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.

ZytoLight® FISH probes are direct labeled using the unique ZytoLight® Direct Label System II providing improved signal intensity. Advanced specificity of the single copy SPEC probes is obtained by the unique ZytoVision® Repeat Subtraction Technique.