CGI ITALIA
Empowering Personalized Cancer Treatment

RB1/D13S1009 DNA-FISH Probe

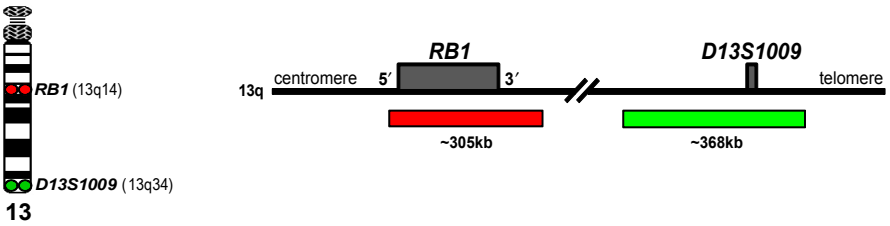
Two Color, Deletion Probe CE

Ref: 27-014

RB1/ D13S1009

Intended Use

The ready-to-use *RB1/D13S1009* DNA-FISH Probe is designed to detect loss of the *RB1* gene on chromosome 13q14 relative to the control marker, *D13S1009*, on chromosome 13q34 by fluorescence in situ hybridization (FISH). The *RB1* gene is a well characterized tumor-suppressor gene; bi-allelic inactivation of the *RB1* gene due to mutations and/or deletions is causal for the development of Retinoblastoma (RB). Deletions of the *RB1* locus are also common in a wide variety of solid tumors and hematologic malignancies including chronic lymphocytic leukemia, multiple myeloma, acute myelocytic leukemia, myelodysplastic syndrome, and chronic myeloproliferative disorders (1-4). This locus is proximal to the *D13S25* locus at 13q14.3 which is often co-deleted with the *RB1* gene in some B-cell hematologic malignancies.



Schematic representation of the *RB1/D13S1009* Deletion DNA-FISH Probe: Horizontal red and green bars indicate the regions covered by the probes (approximate to scale, NCBI Build 36.1/Hg18/2006). The directly labeled *RB1* probe (red) spans the entire gene. The directly labeled *D13S1009* probe (green) hybridizes to the region surrounding the locus marker *D13S1009* and serves as the control.

Signal Interpretation

In normal diploid interphase nuclei and metaphase chromosomes, the probe generates two red and two green signals corresponding to the two normal chromosomes 13 (Figure 1). In cells with deletion of an entire chromosome 13, the number of both red (*RB1*) and green (*D13S1009*) signals will be decreased (Figure 2). In cells with interstitial deletion of chromosome 13, in which the *RB1* locus is deleted and the *D13S1009* locus retained, one red (*RB1*) and two green (*D13S1009*) signals will be observed. Please note that the 305 kb *RB1* probe extends beyond the gene, therefore, small internal *RB1* deletions may not result in detectable loss of signal. If unexpected signal patterns are observed, hybridization to metaphase chromosomes is recommended.

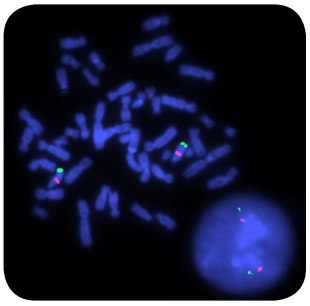


Figure 1: Normal diploid metaphase and interphase nucleus with two red (*RB1*) and two green (*D13S1009*) signals.

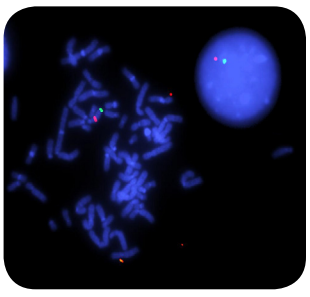


Figure 2: Tumor metaphase and interphase nucleus, each with one red (*RB1*) and one green (*D13S1009*) signal indicating loss of an entire chromosome 13.

Filter Requirements for Fluorescence Microscopy

Fluorophore	Excitation max	Emission max
Green	496 nm	520 nm
Red	580 nm	603 nm
DAPI	360 nm	460 nm

References

1.Khidr L, Chen PL. Oncogene 25:5210-5219, 2006

2.Goodrich DW. Oncogene 25:5233-5243, 2006

3.Genovese C, et al. Oncogene 25:5201-5209, 2006
Lohmann DR. RB1 (retinoblastoma). Atlas Genet Cytogenet Oncol Haematol, September 1999.
URL:http://AtlasGeneticsOncology.org/Genes/RB1ID90.html

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