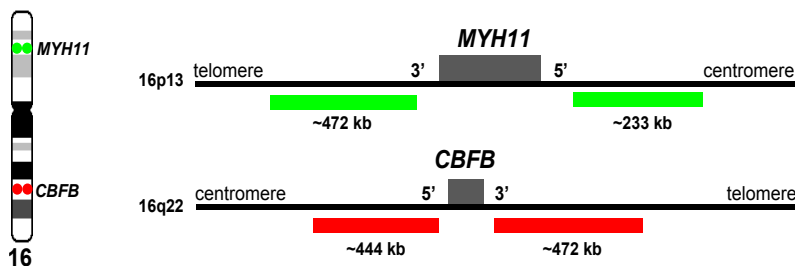


## Intended Use

The *MYH11/CBFB* DNA-FISH Probe is designed to detect the pericentric inversion of chromosome 16 (*inv(16)(p13q22)*) and *t(16;16)(p13;q22)* involving the *MYH11* gene on 16p13 and the *CBFB* gene on 16q22 using fluorescence *in situ* hybridization (FISH). The rearrangement of the *MYH11* and *CBFB* gene results in a fusion of both genes. The *inv(16)* abnormality is found in ~5 - 8% of all of *de novo* acute myeloid leukemia (AML) cases and is associated with AML-M4eo subtype (based on FAB classification).<sup>[1,2]</sup> *Inv(16)* and *t(16;16)* has also been observed in therapy related myelodysplastic syndrome (t-MDS) cases and in eosinophilic blast crisis of chronic myelogenous leukemia (CML) cases.<sup>[2]</sup> Whether alone or as part of a complex patient karyotype, *inv(16)* is indicative of a good prognosis in AML cases.<sup>[3]</sup>

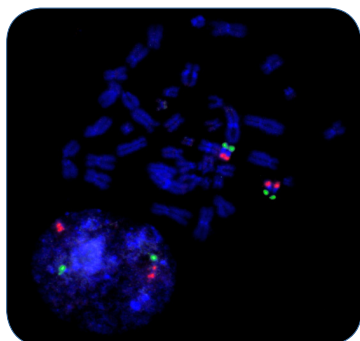


### Schematic of the *MYH11/CBFB* DNA-FISH Probe:

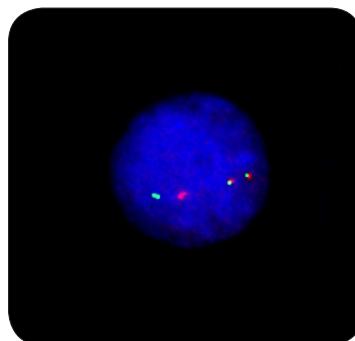
Horizontal red and green bars indicate the region covered by the probes (approximate to scale, NCBI 36.1/HG18/2006). The directly labeled *CBFB* (red) and the *MYH11* (green) probes flank the breakpoints located in the *MYH11* and *CBFB* loci.

## Signal Interpretation

In normal and diploid interphase nuclei and metaphase chromosomes, the DNA-FISH Probe generates two green and two red signals corresponding to the *MYH11* and *CBFB* genes on 16p13 and 16q22, respectively (Figure 1). In tumor cells, the most commonly observed pattern is one red and one green signal that represent the normal chromosome 16 and two fusion signals (red/green or yellow) that represent the inverted chromosome (Figure 2). Due to the close proximity of signals on 16p and 16q, it is recommended that variant pattern or atypical signal patterns are confirmed by metaphase analysis whenever possible.



**Figure 1:** Normal diploid metaphase and interphase nucleus (from normal peripheral blood specimen) with 2 green (*MYH11*) and 2 red (*CBFB*) signals.



**Figure 2:** Interphase nuclei with 1 green (*MYH11*), 1 red (*CBFB*), and 2 fusion (red/green or yellow) signals.

## References

1. LeBeau, M.M., et al., *N Eng J Med*, 1983. 309(11): 630-6.
2. Huret, J. L. *inv(16)(p13q22), t(16;16)(p13;q22), del(16)(q22)*. [www.AtlasGeneticsOncology.org](http://www.AtlasGeneticsOncology.org).
3. Mrozek K, et al. *Blood Rev* 18:115-136, 2004

## Fluorescence Microscopy Filter Requirements

Fluorophore	Excitation <sub>max</sub>	Emission <sub>max</sub>
Green	496 nm	520 nm
Red	580 nm	603 nm
DAPI	360 nm	460 nm

Instructions for use are available at [www.cancergeneticsitalia.com](http://www.cancergeneticsitalia.com)