

# ZytoLight® SPEC ROS1 Dual Color Break Apart Probe



## Background

The ZytoLight® SPEC ROS1 Dual Color Break Apart Probe is designed to detect translocations involving the chromosomal region 6q22.1 harboring the ROS proto-oncogene 1, receptor tyrosine kinase (ROS1, a.k.a. MCF3) gene.

The ROS1 gene is located on 6q22.1 and encodes a receptor tyrosine kinase. Translocations affecting ROS1 have been detected in glioblastoma, cholangiocarcinoma, and non-small cell lung cancer (NSCLC).

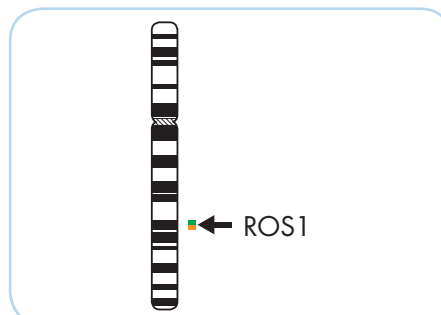
In NSCLC several ROS1 translocation partners have been detected all of which result in the fusion of variably truncated forms of e.g. TPM3, SDC4, SLC34A2, CD74, EZR, or LRIG3 to the kinase domain of ROS1. GOPC has also been found to be fused to ROS1 in NSCLC. GOPC-ROS1 fusions result from interstitial deletion of approx. 240 kb on 6q22.1.

ROS1 rearrangements are thought to define a molecular subset of NSCLC with distinct clinical characteristics that are similar to those observed in patients with ALK rearranged NSCLC.

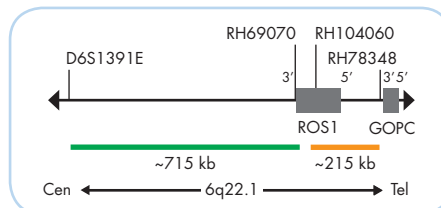
First evidence suggests that administration of ROS1 kinase inhibitors may represent a very effective therapeutic strategy in NSCLC patients harboring activating ROS1 rearrangements. Accordingly, detection of ROS1 rearrangements using Fluorescence *in situ* Hybridization might be a helpful tool for the identification of patients likely to respond to ROS1 kinase targeting therapies.

## Probe Description

The SPEC ROS1 Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the 6q22.1 band. The orange fluorochrome direct labeled probe hybridizes distal, the green fluorochrome direct labeled probe hybridizes proximal to the ROS1 breakpoint region at 6q22.1.



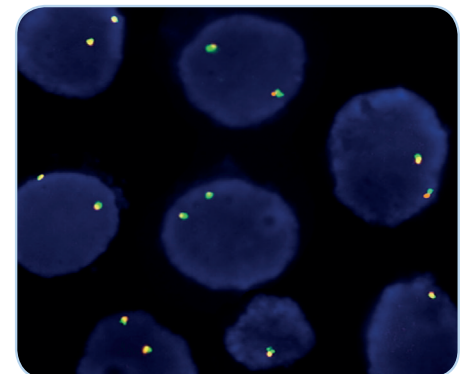
Ideogram of chromosome 6 indicating the hybridization locations.



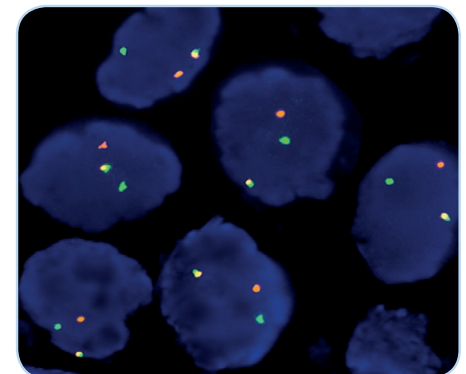
SPEC ROS1 Probe map (not to scale).

## Results

In an interphase nucleus lacking an aberration involving the 6q22.1 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 6q22.1 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 6q22.1 locus and one 6q22.1 locus affected by a translocation. Isolated green signals are the result of deletions distal to the ROS1 breakpoint region or are due to unbalanced translocations affecting this chromosomal region.



SPEC ROS1 Dual Color Break Apart Probe hybridized to normal interphase cells as indicated by two orange/green fusion signals per nucleus.



Section of paraffin embedded NSCLC cell line with translocation affecting the 6q22.1 locus harboring ROS1 as indicated by one orange/green fusion signal (non-rearranged), one orange signal, and one separate green signal.

## References

- Bergthron K, et al. (2012) J Clin Oncol 30: 863-70.
- Birchmaier C, et al. (1987) Proc Natl Acad Sci U S A 84: 9270-4.
- Bos M, et al. (2013) Lung Cancer 81: 142-3.
- Lee SE, et al. (2015) Mod Pathol 28: 468-79.
- Rikova K, et al. (2007) Cell 131: 1190-203.
- Rimkunas VM, et al. (2012) Clin Cancer Res 18: 4449-57.
- Suehara Y, et al. (2012) Clin Cancer Res 18: 6599-608.
- Takeuchi K, et al. (2012) Nat Med 18: 378-81.

Prod. No.	Product	Label	Tests* (Volume)
Z-2144-50	ZytoLight SPEC ROS1 Dual Color Break Apart Probe CE IVD	●/●	5 (50 µl)
Z-2144-200	ZytoLight SPEC ROS1 Dual Color Break Apart Probe CE IVD	●/●	20 (200 µl)
Related Products			
Z-2028-5	ZytoLight FISH-Tissue Implementation Kit CE IVD Incl. Heat Pretreatment Solution Citric, 150 ml; Pepsin Solution, 1 ml; Wash Buffer SSC, 210 ml; 25x Wash Buffer A, 50 ml; DAPI/DuraTect-Solution, 0.2 ml		5
Z-2028-20	ZytoLight FISH-Tissue Implementation Kit CE IVD Incl. Heat Pretreatment Solution Citric, 500 ml; Pepsin Solution, 4 ml; Wash Buffer SSC, 560 ml; 25x Wash Buffer A, 100 ml; DAPI/DuraTect-Solution, 0.8 ml		20

\* 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.