

# ZytoLight® SPEC NTRK2 Dual Color Break Apart Probe



## Background

The ZytoLight® SPEC NTRK2 Dual Color Break Apart Probe is designed to detect translocations involving the chromosomal region 9q21.33 harboring the NTRK2 (neurotrophic receptor tyrosine kinase 2, a.k.a. TRKB) gene.

NTRK2 is a receptor tyrosine kinase (TK) that upon brain-derived growth factor (BDGF) and neurotrophin 4/5 (NT-4/5) binding phosphorylates itself and members of the MAPK pathway. It plays a key role in central and peripheral nervous system development as well as in cell survival. Translocations affecting the NTRK2 gene have been reported in several cancer types, including glioblastomas, pilocytic astrocytomas, head and neck squamous cell carcinoma, and lung adenocarcinoma. NTRK2 rearrangements result in the fusion of the 3' end of the NTRK2 gene with the 5' end of different activating genes (AGBL4, PAN3, or AFAP1). All these fusion genes encode hybrid proteins comprising the TK domain of NTRK2 and the N-terminus of the partner proteins encoding dimerization domains which results in ligand-independent TK activity.

Currently, there are several ongoing clinical trials involving drugs with known inhibitory activity of NTRK-related kinases. Entrectinib and LOXO-101 represent two of these TRK inhibitors which have shown promising activity and good tolerability in patients with advanced solid tumors or NSCLC harboring NTRK1, 2, and 3 rearrangements.

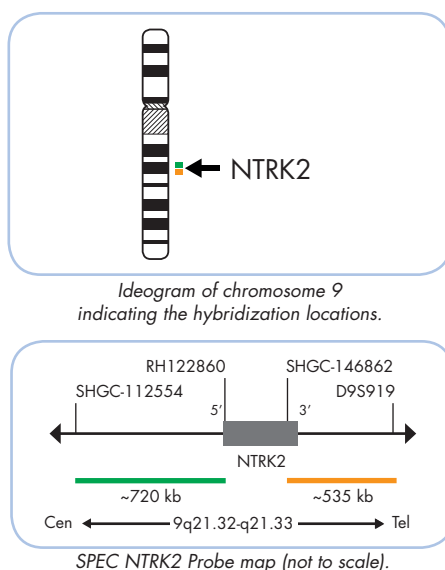
Hence, detection of NTRK2 translocations by Fluorescence *in situ* Hybridization (FISH) may be of diagnostic and therapeutic relevance.

## References

- Amatu A, et al. (2016) ESMO Open 1: e000023.  
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Raez LE & Rolfo C (2016) Lung Cancer Manag 5: 1-4.  
Stransky N, et al. (2014) Nat Commun 5: 4846.  
Wu G, et al. (2014) Nat Genet 46: 444-50.

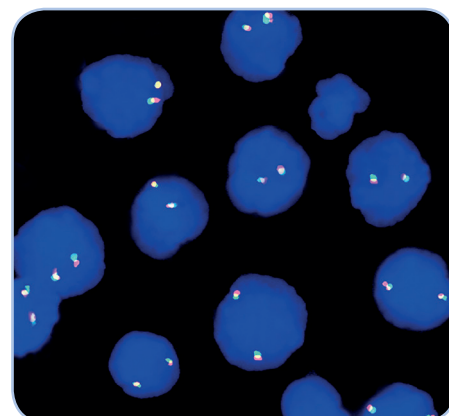
## Probe Description

The SPEC NTRK2 Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the 9q21.32-q21.33 band. The green fluorochrome direct labeled probe hybridizes proximal to the NTRK2 breakpoint region at 9q21.32-q21.33, the orange fluorochrome direct labeled probe hybridizes distal to the NTRK2 breakpoint region at 9q21.33.



## Results

In an interphase nucleus of a normal cell lacking a translocation involving the 9q21.32-q21.33 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 9q21.32-q21.33 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 9q21.32-q21.33 locus and one 9q21.32-q21.33 locus affected by a translocation.



SPEC NTRK2 Dual Color Break Apart Probe hybridized to normal interphase cells as indicated by two orange/green fusion signals per nucleus.

Prod. No.	Product	Label	Tests* (Volume)
Z-2205-200	ZytoLight SPEC NTRK2 Dual Color Break Apart Probe CE IVD	●/●	20 (200 µl)
<b>Related Products</b>			
Z-2028-20	ZytoLight FISH-Tissue Implementation Kit CE IVD		20
Incl. Heat Pretreatment Solution Citric, 500 ml; Pepsin Solution, 4 ml; Wash Buffer SSC, 500 ml; 25x Wash Buffer A, 100 ml; DAPI/DuraTect-Solution, 0.8 ml			

\* 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.