# ZytoLight® SPEC NRG1/CD74 TriCheck™ Probe

CE IVD

## Background

The ZytoLight® SPEC NRG1/CD74 TriCheck™ Probe is designed to detect translocations involving the chromosomal region 8p12 harboring the NRG1 (neuregulin 1, a.k.a. HGL or GGF) gene and the chromosomal region 5q32 harboring the CD74 gene.

Using this probe it is possible to discriminate between CD74-NRG1 fusions and translocations affecting NRG1, but not CD74, such as SLC3A2-NRG1 or VAMP2-NRG1 fusions.

NRG1 encodes a variety of growth factors that are ligands for tyrosine kinase receptors of the ERBB family. Rearrangements of the NRG1 gene have been detected in various tumors, including breast cancer, lung cancer, and ovarian adenocarcinoma.

NRG1 translocation-positive breast tumors show a more advanced pathological stage compared with translocation-negative tumors.

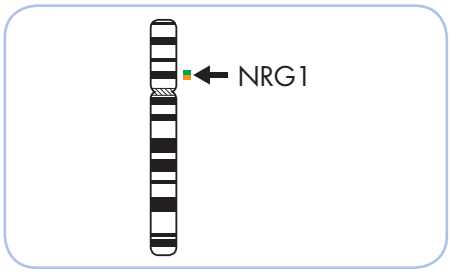
NRG1 rearrangements in lung adenocarcinoma of never smokers were found to result in, e.g., the fusion of CD74 to the EGF-like domain of NRG1and to be associated with a shorter overall and disease-free survival. Due to the involvement of NRG1 fusion proteins in oncogenesis and their association with ERBB receptors, NRG1 constitutes a good candidate for potential therapeutic applications, e.g., in relation to lung tumor subtypes with so far no effective treatment.

Hence, detection of NRG1 rearrangements and CD74-NRG1 fusions by FISH may be of prognostic and therapeutic significance.

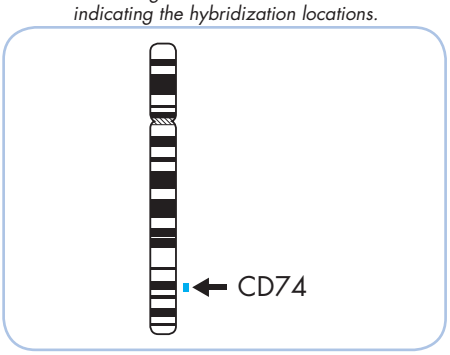
**References**
Adélaïde J, et al. (2003) Genes Chromosomes Cancer 37: 333-45.
Fernandez-Cuesta L, et al. (2014) Cancer Discov 4: 415-22.
Han JY, et al. (2015) Cancer Res 75: 614.
Huang HE, et al. (2004) Cancer Res 64: 6840-4.
Jung Y, et al. (2015) J Thorac Oncol 10: 1107-11.
Pole JC, et al. (2006) Oncogene 25: 5693-706.

## Probe Description

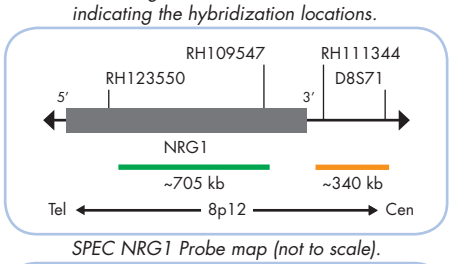
The SPEC NRG1/CD74 TriCheck™ Probe is a mixture of three direct labeled probes hybridizing to the 8p12 and 5q32-q33.1 bands. The green fluorochrome direct labeled probe hybridizes distal and the orange fluorochrome direct labeled probe hybridizes proximal to the NRG1 breakpoint region at 8p12. The blue fluorochrome direct labeled probe hybridizes to the CD74 gene region at 5q32-q33.1.



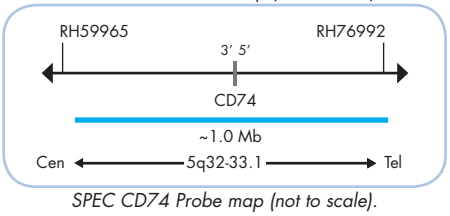

*Ideogram of chromosome 8 indicating the hybridization locations.*




*Ideogram of chromosome 5 indicating the hybridization locations.*



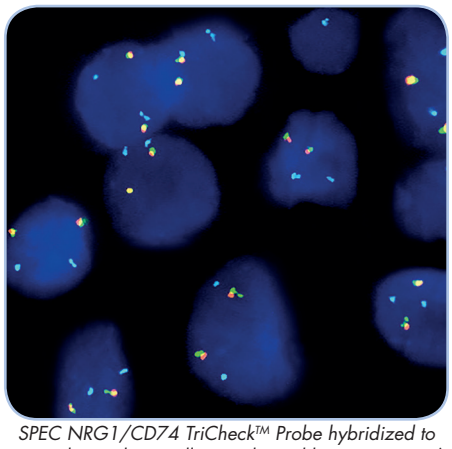

*SPEC NRG1 Probe map (not to scale).*




*SPEC CD74 Probe map (not to scale).*

## Results

In an interphase nucleus lacking a rearrangement involving the 8p12 and 5q32-q33.1 bands, two orange/green fusion signals and two blue signals are expected. A CD74-NRG1 fusion is indicated by one separate green signal, one separate orange signal, and an additional blue signal which colocalizes with the separated orange signal. An NRG1 rearrangement not involving CD74 is indicated by separated orange and green signals without an additional blue signal.



*SPEC NRG1/CD74 TriCheck™ Probe hybridized to normal interphase cells as indicated by two orange/green fusion signals and two blue signals per nucleus.*

| Prod. No. | Product | Label | Tests* (Volume) |
|---|---|---|---|
| Z-2194-200 | ZytoLight SPEC NRG1/CD74 TriCheck Probe CE IVD | ●/●/● | 20 (200 µl) |
| **Related Products** | | | |
| Z-2028-20 | ZytoLight FISH-Tissue Implementation Kit CE IVD<br>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 | | 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.*



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.*

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