

ZytoLight® SPEC NRG1 Dual Color Break Apart Probe

Background

The ZytoLight® SPEC NRG1 Dual Color Break Apart Probe is designed to detect translocations involving the chromosomal region 8p12 harboring the NRG1 (neuregulin 1, a.k.a. HGL or GGF) gene. 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 adenocarcinomas of never smokers were found to result in the fusion of CD74 to the EGF-like domain of NRG1. Several *in vitro* studies indicate that NRG1 fusion proteins lead to an increased activation of ERBB receptors and are hence involved in tumor development.

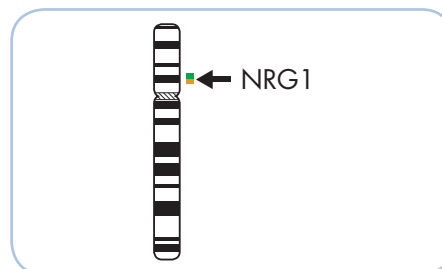
Due to the involvement of NRG1 isoforms in oncogenesis and their association with ERBB receptors, NRG1 constitutes a good candidate for potential therapeutic applications, e.g., in relation to lung tumor subtypes with so far no effective treatment. Hence, detection of NRG1 rearrangements by Fluorescence *in situ* Hybridization represents a useful tool for studying carcinogenesis of various solid tumors and may be of prognostic and therapeutic significance.

References

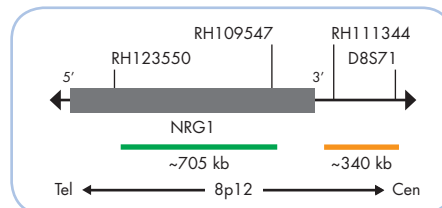
Adelaide J, et al. (2003) *Genes Chromosomes Cancer* 37: 333-45.
Fernandez-Cuesta L, et al. (2014) *Cancer Discov* 4: 415-22.
Huang HE, et al. (2004) *Cancer Res* 64: 6840-4.
Pole JC, et al. (2006) *Oncogene* 25: 5693-706.

Probe Description

The SPEC NRG1 Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the 8p12 band. The green fluorochrome direct labeled probe hybridizes distal and the orange fluorochrome direct labeled probe hybridizes proximal to the NRG1 breakpoint region.



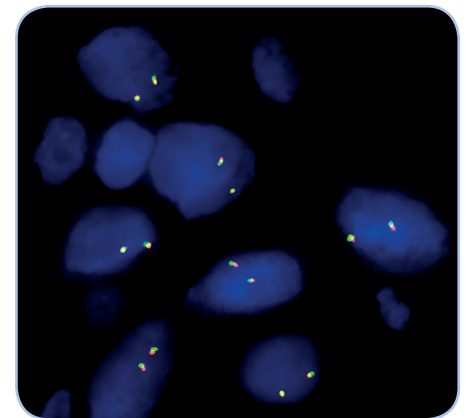
Ideogram of chromosome 8 indicating the hybridization locations.



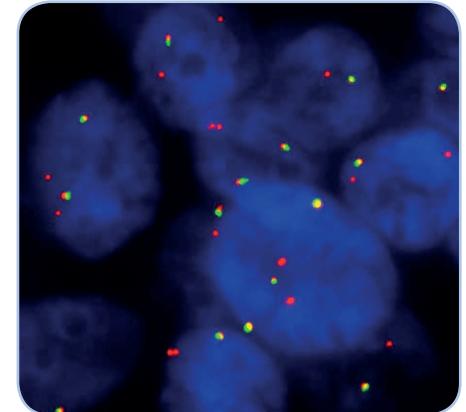
SPEC NRG1 Probe map (not to scale).

Results

In an interphase nucleus lacking a translocation involving the 8p12 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 8p12 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal in lung adenocarcinoma specimens indicates one normal 8p12 locus and one 8p12 locus affected by a translocation.



SPEC NRG1 Dual Color Break Apart Probe hybridized on normal interphase cells as indicated by two orange/green fusion signals per nucleus.



Lung cancer tissue section with rearrangement of the NRG1 gene as indicated by extra orange signals.

Image kindly provided by Mc Leer A, Duruisseaux M, Wislez M and colleagues, Grenoble and Paris, France.

Prod. No.	Product	Label	Tests* (Volume)
Z-2181-200	ZytoLight SPEC NRG1 Dual Color Break Apart Probe CE IVD	●/●	20 (200 µl)
Related Products			
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.