ZytoLight® SPEC NR4A3 Dual Color Break Apart Probe

CE IVD

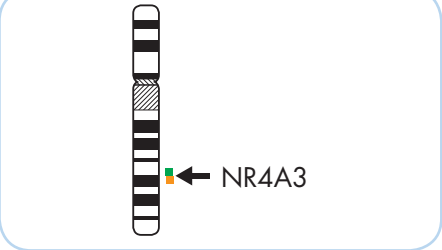
Background

The ZytoLight® SPEC NR4A3 Dual Color Break Apart Probe is designed to detect translocations involving the chromosomal region 9q22.33-q31.1 harboring the nuclear receptor subfamily 4, group A, member 3 (NR4A3; a.k.a. TEC, NOR1, CHN) gene.Extraskeletal myxoid chondrosarcoma (EMC) is a rare soft-tissue sarcoma of chondroblastic origin that occurs primarily in adults. The tumor is characterized by recurrent chromosomal translocations resulting in fusions of the NR4A3 gene to various N-terminal partners including EWSR1, RBP56, TCF12, and TFG. NR4A3 is a member of the steroid/thyroid receptor superfamily and acts as a transcriptional activator. The resulting chimeric proteins contain N-terminal parts of the various partners fused to the entire coding sequence of NR4A3. The most frequent reciprocal translocation is t(9;22)(q22.3-q31;q12.2) found in about 70% of EMC generating a EWSR1-NR4A3 fusion gene in which the 3'-terminal part of EWSR1 is replaced by the entire NR4A3 gene. EMC is histologically characterized by a mixture of cellular and myxoid stromal components, making it difficult to distinguish it from other benign or malignant mesenchymal tumors. Since chromosomal translocations of EWSR1 are found in several different neoplasias while NR4A3 rearrangements have been exclusively detected in EMC, assessment of NR4A3 rearrangements by Fluorescence *in situ* Hybridization might represent a helpful tool for the differential diagnosis of EMC.

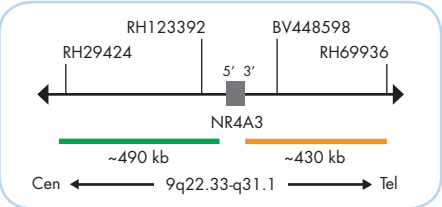
References
Benini S, et al. (2014) J Mol Diagn 16: 314-23.
Labelle Y, et al. (1995) Hum Mol Genet 4: 2219-26.
Nogushi H, et al. (2010) Hum Pathol 41: 336-42.
Ohkura N, et al. (1994) Biochem Biophys Res Commun 205: 1959-65.
Panagopoulos I, et al. (2002) Genes Chromosomes Cancer 35: 340-52.

Probe Description

The SPEC NR4A3 Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the 9q22.33-q31.1 band. The orange fluorochrome direct labeled probe hybridizes distal to the NR4A3 gene and the green fluorochrome direct labeled probe hybridizes proximal to that gene.



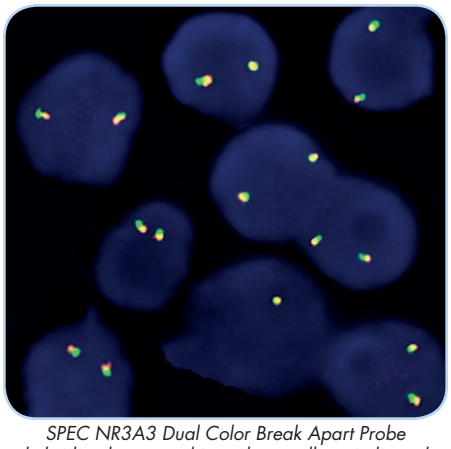
Ideogram of chromosome 9 indicating the hybridization locations.



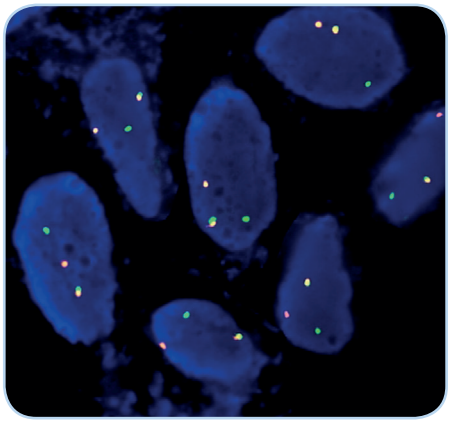
SPEC NR4A3 Probe map (not to scale).

Results

In an interphase nucleus lacking a translocation involving the 9q22.33-q31.1 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 9q22.33-q31.1 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 9q22.33-q31.1 locus and one 9q22.33-q31.1 locus affected by a translocation.



SPEC NR3A3 Dual Color Break Apart Probe hybridized to normal interphase cells as indicated by two orange/green fusion signal per nucleus.



Extraskeletal myxoid chondrosarcoma tissue section with translocation affecting the 9q22.33-q31.1 locus as indicated by one orange/green fusion (non-rearranged) signal, one orange signal, and one separate green signal.

Prod. No.	Product	Label	Tests* (Volume)
Z-2145-50	ZytoLight SPEC NR4A3 Dual Color Break Apart Probe CE IVD	●/●	5 (50 µl)
Related Products			
Z-2028-5	ZytoLight FISH-Tissue Implementation Kit CE IVD Incl. Heat Pretreatment Solution Citric, 150 ml; Pepsin Solution, 1ml; Wash Buffer SSC, 210 ml; 25x Wash Buffer A, 50 ml; DAPI/DuraTect-Solution, 0.2 ml		5

** 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.*