ZytoLight® SPEC ALK/2q11 Dual Color Probe

CE IVD

Background

The ZytoLight® SPEC ALK/2q11 Dual Color Probe is designed for the detection of amplifications of the chromosomal region harboring the ALK gene.

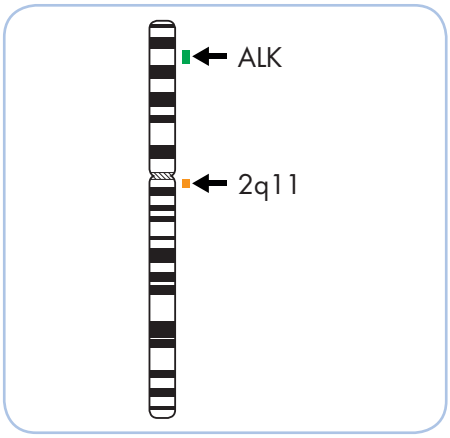
The ALK (anaplastic lymphoma receptor tyrosine kinase, a.k.a. CD246) gene is located on chromosome 2p23.1-p23.2 and encodes a transmembrane receptor tyrosine kinase. ALK was originally identified as a fusion partner of NPM1. This gene fusion is frequently found in anaplastic large cell lymphoma (ALCL), an aggressive non-Hodgkin lymphoma. Rearrangements affecting the ALK gene locus have also been found to play a role in carcinogenesis of a variety of hematopoietic and non-hematopoietic solid tumors, including non-small cell lung cancer (NSCLC). Moreover, ALK amplifications and copy number gains have been reported to occur in a variety of tumors including NSCLC and alveolar rhabdomyosarcoma (ARMS). In colorectal cancer, ALK amplification was correlated with nodal status suggesting that ALK amplified tumors have a more aggressive phenotype. ALK copy number gains and amplifications are also a frequent genetic event in the tumorigenesis of neuroblastomas and were found to result in high ALK expression correlating with an unfavorable neuroblastoma phenotype.

Hence, the identification of ALK gene copy number changes by *in situ* Hybridization might be of prognostic and therapeutic relevance.

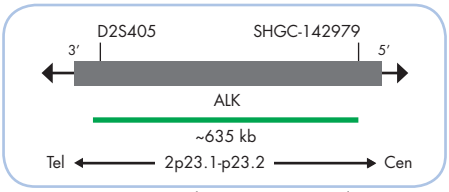
References
Carén H, et al. (2008) Biochem J 416: 153-9.
Corao DA, et al. (2009) Pediatr Dev Pathol 12: 275-83.
Koivunen JP, et al. (2008) Clin Cancer Res 14: 4275-83.
Montagut C, et al. (2010) J Clin Oncol 28: Suppl 10537.
Pelosi G, et al. (2012) Lung Cancer 77: 507-14.
Salido M, et al. (2011) J Thorac Oncol 6: 21-7.
Subramaniam MM, et al. (2009) Hum Pathol 40: 1638-42.

Probe Description

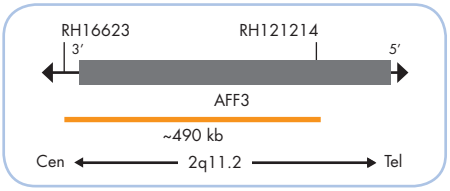
The SPEC ALK/2q11 Dual Color Probe is a mixture of a green fluorochrome direct labeled SPEC ALK probe hybridizing to the human ALK gene in the chromosomal region 2p23.1-p23.2 and an orange fluorochrome direct labeled SPEC 2q11 probe. The SPEC 2q11 probe is specific for the AFF3 (AF4/FMR2 family, member 3) gene region in 2q11.2. Due to cross-hybridizations of chromosome 2 alpha satellites to other centromeric regions, probes specific for 2q11 are frequently used for chromosome 2 copy number detection.



Ideogram of chromosome 2 indicating the hybridization locations.



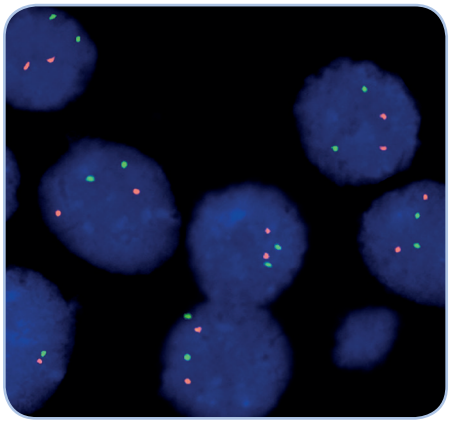
SPEC ALK Probe map (not to scale).



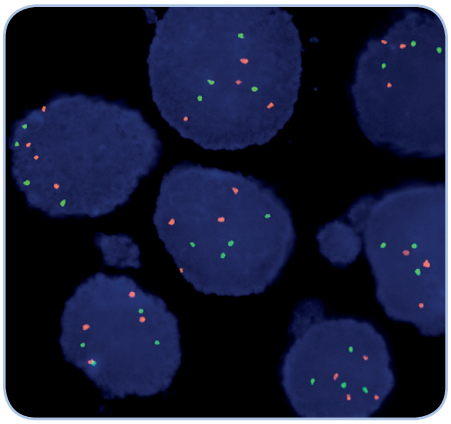
SPEC 2q11 Probe map (not to scale).

Results

In a normal interphase nucleus, two orange and two green signals are expected. In a cell with amplification of the ALK gene locus, multiple copies of the green signal or green signal clusters will be observed.



SPEC ALK/2q11 Dual Color Probe hybridized to normal interphase cells as indicated by two orange and two green signals in each nucleus.



Neuroblastoma tissue section with tetrasomy of chromosome 2 as indicated by four orange (2q11) and four green (ALK) signals in each nucleus.

Prod. No.	Product	Label	Tests* (Volume)
Z-2161-200	ZytoLight SPEC ALK/2q11 Dual Color Probe CE IVD	●/●	20 (200 µl)
Related Products			
Z-2028-20	ZytoLight FISH-Tissue Implementation Kit CE IVD 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.*

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