ZytoLight® SPEC CARS Dual Color Break Apart Probe

CE IVD

Background

The ZytoLight® SPEC CARS Dual Color Break Apart Probe is designed to detect translocations involving the chromosomal region 11p15.4 harboring the CARS (cysteinyl-tRNA-synthetase) gene detected in inflammatory myofibroblastic tumors (IMT).

IMT are neoplastic mesenchymal proliferations that occur predominantly in children and young adults. Cytogentic studies of IMT show various complex karyotypic abnormalities, frequently involving the short arm of chromosome 2 harboring the ALK gene locus in 2p23.1-p23.2. The ALK (anaplastic lymphoma receptor tyrosine kinase, a.k.a. CD246) gene encodes a receptor tyrosine kinase and was frequently identified as a fusion partner of various hybrid genes predominantly in anaplastic large cell lymphoma, and more recently, in non-small cell lung cancer. However, also in IMT several different ALK fusion genes have been identified including CARS-ALK.

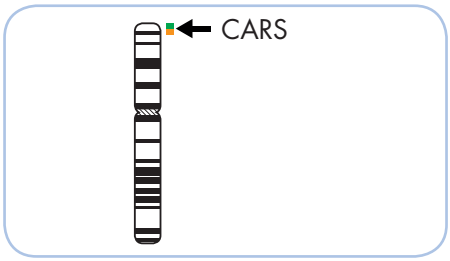
CARS encodes a class 1 aminoacyl-tRNA synthetase and is ubiquitously expressed. The translocation results in the fusion of the active promoter as well as the first domains of CARS to the receptor tyrosine kinase domain of ALK. Thus, CARS is predicted to mediate homodimerization of the chimeric product resulting in constitutive ALK kinase activation.

The detection of translocations affecting CARS and ALK by Fluorescence *in situ* Hybridization might represent a valuable tool to identify a subpopulation of IMT likely to respond to ALK kinase targeting therapies.

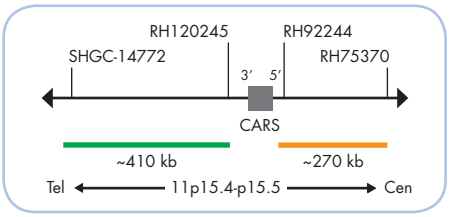
References
Butrynski JE, et al. (2010) N Engl J Med 363: 1727-33.
Cools J, et al. (2002) Genes Chromosomes Cancer 34: 354-62.
Cruzen ME, et al. (1993) Genomics 15: 692-3.
Debelenko LV, et al. (2003) Lab Invest 83: 1255-65.

Probe Description

The SPEC CARS Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the 11p15.4-p15.5 band. The orange fluorochrome direct labeled probe hybridizes proximal to the CARS gene and the green fluorochrome direct labeled probe hybridizes distal to that gene.



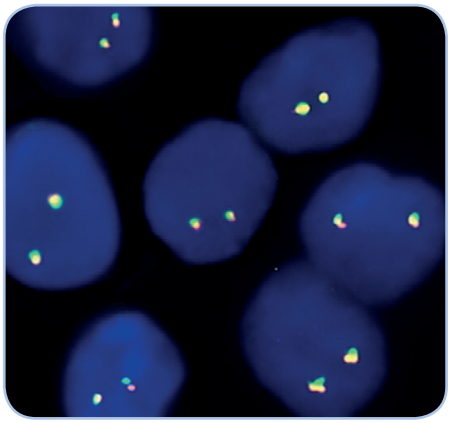
Ideogram of chromosome 11 indicating the hybridization locations.



SPEC CARS Probe map (not to scale).

Results

In an interphase nucleus lacking a translocation involving the 11p15.4-p15.5 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 11p15.4-p15.5 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 11p15.4-p15.5 locus and one 11p15.4-p15.5 locus affected by a translocation.



SPEC CARS 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-2137-50	ZytoLight SPEC CARS 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, 150 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.*

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

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