ZytoLight® SPEC MERTK/2q11 Dual Color Probe

CE IVD

Background

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

The MERTK (MER proto-oncogene, tyrosine kinase, a.k.a. MER, c-Eyk) gene is located on chromosome 2q13 and encodes a receptor tyrosine kinase which is a member of the TAM (TYRO3/AXL/MERTK) family. Binding of the ligands Protein S or growth arrest-specific 6 (GAS6) to MERTK activates the downstream MAPK and PI3K/Akt antiapoptotic pathways, thereby promoting proliferation and survival of normal and cancer cells. Additional downstream pathways lead to enhanced migration and invasion of tumor cells.

Ectopic expression or overexpression of MERTK has been demonstrated in many human cancers, e.g. ALL, AML, astrocytoma, breast cancer, gastric cancer, mantle cell lymphoma, melanoma, and NSCLC.

In NSCLC, MERTK inhibition was shown to increase apoptosis and to decrease tumor formation in a mouse model.

In melanomas, MERTK expression was shown to correlate with disease progression, with the highest expression in metastatic melanomas. In addition, MERTK inhibition diminished tumor size by 60% in a human melanoma xenograft model.

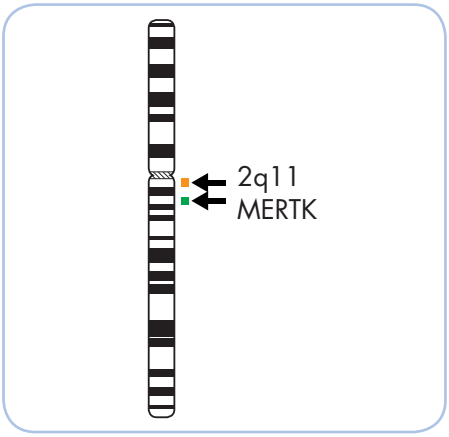
In gastric cancer patients, MERTK expression is associated with a shorter overall survival.

Hence, the identification of MERTK gene copy number changes by Fluorescence *in situ* Hybridization and targeted MERTK signaling inhibition may be of therapeutic significance in various types of tumors.

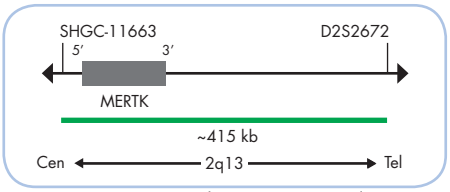
References
Graham DK, et al. (1994) Cell Growth Differ 5: 647-57.
Knubel KH, et al. (2014) Oncotarget 5: 1338- 51.
Linger RM, et al. (2013) Oncogene 32: 3420-31.
Rogers AE, et al. (2012) Oncogene 31: 4171-81.
Schlegel J, et al. (2013) J Clin Invest 123: 2257-67.
Verma A, et al. (2011) Mol Cancer Ther 10: 1763-73.
Yi JH, et al. (2015) Oncotarget [Epub ahead of print].

Probe Description

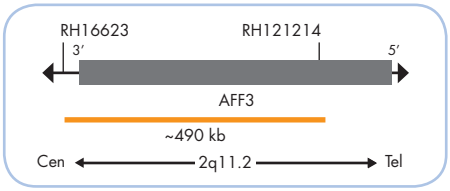
The SPEC MERTK/2q11 Dual Color Probe is a mixture of a green fluorochrome direct labeled SPEC MERTK probe hybridizing to the MERTK gene in the chromosomal region 2q13 and an orange fluorochrome direct labeled SPEC 2q11 probe. The SPEC 2q11 probe is specific for the AFF3 (AF4/FMR2 family, member 3) gene 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.



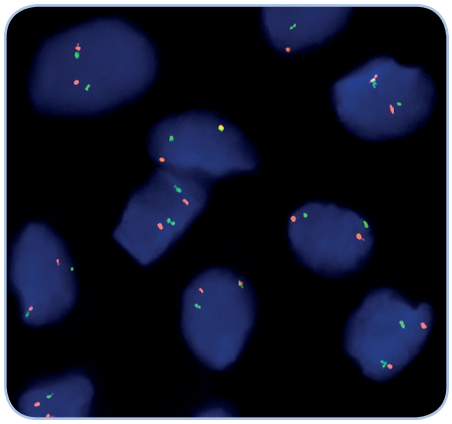
SPEC MERTK Probe map (not to scale).



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 MERTK gene locus, multiple copies of the green signal or green signal clusters will be observed.



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

Prod. No.	Product	Label	Tests* (Volume)
Z-2155-200	ZytoLight SPEC MERTK/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.*

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