ZytoLight® SPEC FOXO1/PAX3 TriCheck™ Probe

CE IVD

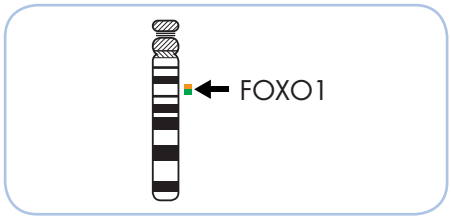
Background

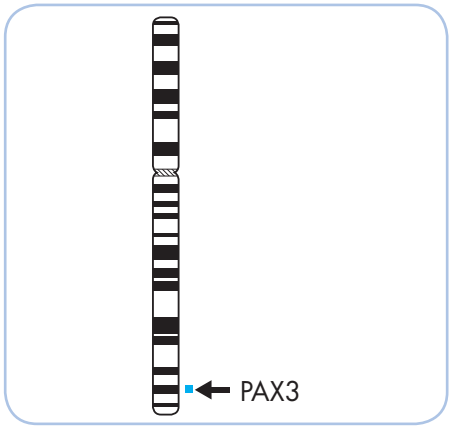
The ZytoLight® SPEC FOXO1/PAX3 TriCheck™ Probe is designed to detect translocations involving the chromosomal region 13q14.11 harboring the FOXO1 (forkhead box O1, a.k.a. FKHR) gene and the chromosomal region 2q36.1 harboring the PAX3 (paired box 3, a.k.a. HUP2) gene.
Among solid tumors of the childhood, rhabdomyosarcoma is the most common soft tissue sarcoma. Rhabdomyosarcomas are classified in two main categories: embryonal and alveolar rhabdomyosarcoma. Generally, the alveolar histology is associated with a poorer prognosis.
Alveolar rhabdomyosarcoma (ARMS) is characterized by two tumor-specific translocations, i.e., t(2;13)(q36;q14.1) and t(1;13)(p36.1;q14.1) which are detectable in most cases of ARMS. The translocations involve the FOXO1 gene and either PAX7 on chromosome 1p36.13 or PAX3 on chromosome 2q36.1. PAX7-FOXO1 is less common but is associated with a better prognosis than PAX3-FOXO1 fusion.
The translocations and their fusion genes represent highly specific genetic markers useful in the diagnosis and prognosis of ARMS.

References
Dal Cin P, et al. (1991) Cancer Genet Cytogenet 55: 191-5.
Douglass EC, et al. (1991) Genes Chromosomes Cancer 3: 480-2.
Gunawan B, et al. (1999) Pathol Oncol Res 5: 211-3.
Jain S, et al. (2010) Int J Clin Exp Pathol 3: 416-28.
Seidal T, et al. (1982) Acta Pathol Microbiol Immunol Scand [A]: 345-54.

Probe Description

The SPEC FOXO1/PAX3 TriCheck™ Probe is a mixture of three direct labeled probes hybridizing to the 13q14.11 and 2q36.1 bands. The orange fluorochrome direct labeled probe hybridizes proximal and the green fluorochrome direct labeled probe hybridizes distal to the FOXO1 breakpoint region at 13q14.11. The blue fluorochrome direct labeled probe hybridizes distal to the PAX3 gene at 2q36.1.

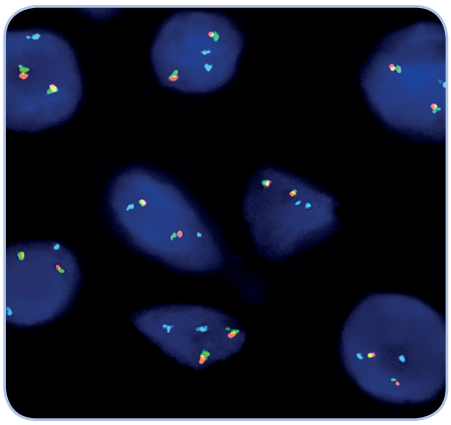




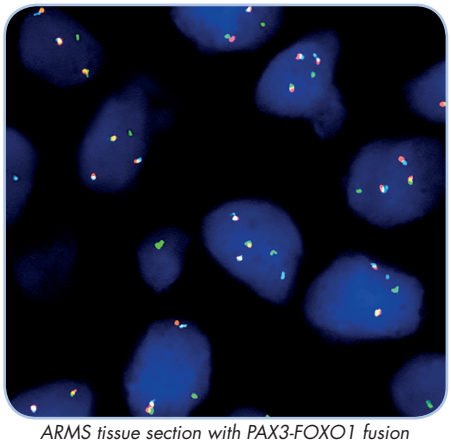
Ideograms of chromosomes 13 (above) and 2 (below) indicating the hybridization locations.

Results

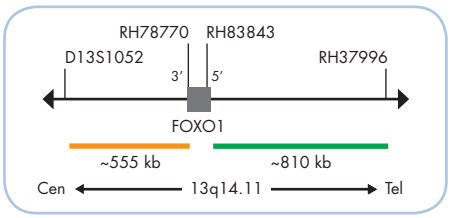
In an interphase nucleus without PAX3-FOXO1 rearrangement, two green/orange fusion signals and two blue signals are expected.
A PAX3-FOXO1 fusion is indicated by one separate orange signal co-localizing with one blue signal and one separate green signal.
A FOXO1 translocation without involvement of PAX3 is indicated by the split of one green/orange fusion signal without co-localization of the separated orange signal with one blue signal.



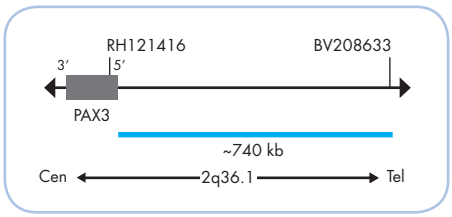
SPEC FOXO1/PAX3 TriCheck™ Probe hybridized to normal interphase cells as indicated by two orange/green fusion signals and two blue signals per nucleus.



ARMS tissue section with PAX3-FOXO1 fusion as indicated by orange/blue fusion signals.



SPEC FOXO1 Probe map (not to scale).



SPEC PAX3 Probe map (not to scale).

Prod. No.	Product	Label	Tests* (Volume)
Z-2185-50	ZytoLight SPEC FOXO1/PAX3 TriCheck 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, 1 ml; 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.*

FE114-1-16

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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