

ZytoDot[®] 2C SPEC RET Break Apart Probe

Background

The ZytoDot[®] 2C SPEC RET Break Apart Probe is designed to detect translocations involving the chromosomal region 10q11.21 harboring the RET (rearranged during transfection proto-oncogene) gene. RET encodes a tyrosine kinase (TK) receptor.

Translocations involving RET were first described in papillary thyroid carcinoma (PTC) where somatic rearrangements result in the fusion of its TK catalytic domain with an N-terminal dimerization domain encoded by various fusion partner genes.

More recently, recurrent inversions [inv (10)(p11.2;q11.2)] fusing the coiled-coil domains of the kinesin family member 5B (KIF5B) gene to the RET kinase domain have been detected in lung adenocarcinoma.

The resulting KIF5B-RET fusion protein can form homodimers through the coiled-coil domains of KIF5B, causing an aberrant activation of the TK of RET, a mechanism known from KIF5B-ALK fusions which is also found in lung adenocarcinoma.

Since *in vitro* studies showed transforming activity of KIF5B-RET which could be suppressed by a TK inhibitor, it was assumed that the chimeric oncogene might be a promising molecular target for the treatment of lung cancer.

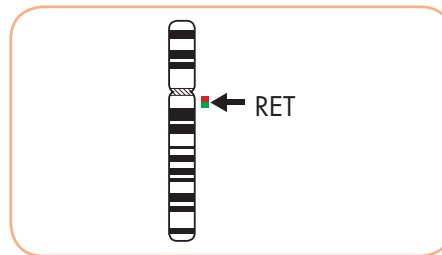
The same holds true for the BCR-RET and FGFR1OP-RET fusion genes in chronic myelomonocytic leukemia (CMML) generated by two balanced translocations t(10;22)(q11.2;q11.2) and t(6;10)(q27;q11.2), respectively.

References

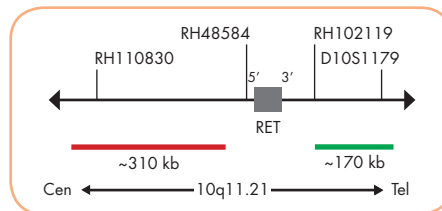
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Probe Description

The ZytoDot[®] 2C SPEC RET Break Apart Probe is a mixture of a Digoxigenin-labeled and a Dinitrophenyl-labeled probe hybridizing to the 10q11.21 band. The DNP-labeled probe hybridizes proximal to the RET gene breakpoint region at 10q11.21, the DIG-labeled probe hybridizes distal to the RET gene breakpoint region.



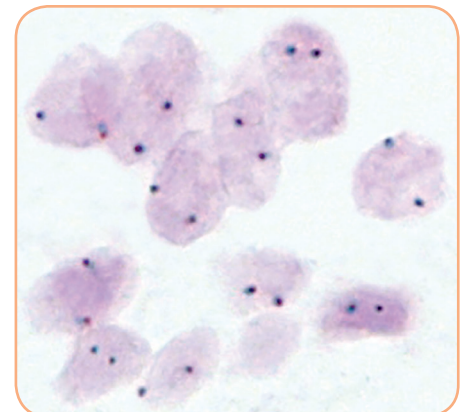
Ideogram of chromosome 10 indicating the hybridization locations.



SPEC RET Probe map (not to scale).

Results

In an interphase nucleus of a normal cell lacking a translocation involving the 10q11.21 band, using the ZytoDot[®] 2C CISH Implementation Kit, two red/green fusion signals are expected representing two normal (non-rearranged) 10q11.21 loci. A signal pattern consisting of one red/green fusion signal, one red signal, and a separate green signal indicates one normal 10q11.21 locus and one 10q11.21 locus affected by a translocation or inversion.



SPEC RET Break Apart Probe hybridized to normal interphase cells as indicated by two red/green fusion signals per nucleus.

| Prod. No. | Product | Label | Tests* (Volume) |
|------------|--|-----------------|-----------------|
| C-3064-100 | ZytoDot 2C SPEC RET Break Apart Probe CE IVD | Digoxigenin/DNP | 10 (100 µl) |
| C-3064-400 | ZytoDot 2C SPEC RET Break Apart Probe CE IVD | Digoxigenin/DNP | 40 (400 µl) |

Related Products

| | | | |
|-----------|--|--|----|
| C-3044-10 | ZytoDot 2C CISH Implementation Kit CE IVD Incl. Heat Pretreatment Solution EDTA, 150 ml; Pepsin Solution, 1 ml; Wash Buffer SSC, 150 ml; 20x Wash Buffer TBS, 50 ml; Anti-DIG/DNP-Mix, 1 ml; HRP/AP-Polymer-Mix, 1 ml; AP-Red Solution A, 0.1 ml; AP-Red Solution B, 4 ml; HRP-Green Solution A, 0.2 ml; HRP-Green Solution B, 4 ml; Nuclear Blue Solution, 4 ml; Mounting Solution (alcoholic), 1 ml | | 10 |
| C-3044-40 | ZytoDot 2C CISH Implementation Kit CE IVD Incl. Heat Pretreatment Solution EDTA, 500 ml; Pepsin Solution, 4 ml; Wash Buffer SSC, 500 ml; 20x Wash Buffer TBS, 2x 50 ml; Anti-DIG/DNP-Mix, 4 ml; HRP/AP-Polymer-Mix, 4 ml; AP-Red Solution A, 0.4 ml; AP-Red Solution B, 15 ml; HRP-Green Solution A, 0.8 ml; HRP-Green Solution B, 15 ml; Nuclear Blue Solution, 20 ml; Mounting Solution (alcoholic), 4 ml | | 40 |

* 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.