Background
The ZytoLight® SPEC NUTM1 Dual Color Break Apart Probe is designed to detect translocations involving the chromosomal region 15q14 harboring the NUTM1 (NUT midline carcinoma family member 1, a.k.a. NUT) gene.

NUT midline carcinoma (NMC) is a rare and aggressive form of squamous cell carcinoma that arises mainly in the head, neck, or mediastinum. NMC is genetically defined by the presence of chromosomal rearrangements involving the NUTM1 gene. Two-thirds of NMCs have t(15;19)(q14;p13.1) fusing the NUTM1 gene to the BRD4 gene. Less commonly, NMC harbors a NUTM1-variant fusion gene involving BRD3 or still-uncharacterized genes. NMCs may be indistinguishable from more common squamous cell carcinomas and are thus an underdiagnosed entity. Therefore, the diagnosis of NMC depends on the confirmation of NUTM1 rearrangement. BRD3 and BRD4 belong to the bromo and extra terminal (BET) family of bromodomain proteins. BRD-NUTM1 chimeric oncoproteins repress squamous differentiation, possibly by sequestering histone acetyltransferase activity. Accordingly, histone deacetylase inhibitors or BET inhibitors were shown to reverse the effects of BRD-NUTM1 fusion proteins by inducing terminal differentiation of NMC cells in vitro and in xenograft models.

Hence, detection of NUTM1 rearrangements by FISH represents a useful tool in the differential diagnosis of NMC and may be of therapeutic significance.

Probe Description
The SPEC NUTM1 Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the 15q14 band. The green fluorochrome direct labeled probe hybridizes proximal and the orange fluorochrome direct labeled probe hybridizes distal to the NUTM1 gene.

Results
In an interphase nucleus lacking a translocation involving the 15q14 band, two orange/green fusion signals are expected representing two normal (non-rearranged) 15q14 loci. A signal pattern consisting of one orange/green fusion signal, one orange signal, and a separate green signal indicates one normal 15q14 locus and one 15q14 locus affected by a translocation.

References

ZytoLight® SPEC NUTM1 Dual Color Break Apart Probe

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.

Related Products

<table>
<thead>
<tr>
<th>Prod. No.</th>
<th>Product</th>
<th>Label</th>
<th>Tests* (Volume)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z-2208-200</td>
<td>ZytoLight SPEC NUTM1 Dual Color Break Apart Probe</td>
<td>CE IVD</td>
<td>20 (200 μl)</td>
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</tbody>
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* 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.