ZytoLight® SPEC ERBB3/CEN 12 Dual Color Probe

Previously: ZytoLight SPEC HER3/CEN 12 Dual Color Probe

ZytoLight® SPEC ERBB4/2q11 Dual Color Probe

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CE IVD

Background

The ZytoLight® SPEC ERBB3/CEN 12 Dual Color Probe and SPEC ERBB4/2q11 Dual Color Probe are designed for the detection of amplifications of the chromosomal regions harboring the genes ERBB3 and ERBB4, respectively.

Genes ERBB3 (a.k.a. HER3) and ERBB4 (a.k.a. HER4) both encode transmembrane glycoproteins acting as cellular growth factor receptors. These proteins belong to the epidermal growth factor receptor subgroup of the receptor tyrosine kinase superfamily also including ERBB1 (EGFR) and ERBB2, known to be affected by gene amplifications in a number of malignant tumors.

Although EGFR and ERBB2 have been shown to represent good predictive markers and appropriate targets for therapeutic approaches, relatively less is known of comparable significance for ERBB3 and ERBB4. However, there is growing evidence that cooperation of all four members of the ERBB gene family contributes to a more aggressive tumor phenotype and influences therapeutic response.

Accordingly, it is assumed that the assessment of the combined amplification status of ERBB1 to ERBB4 may improve the diagnostic value significantly.

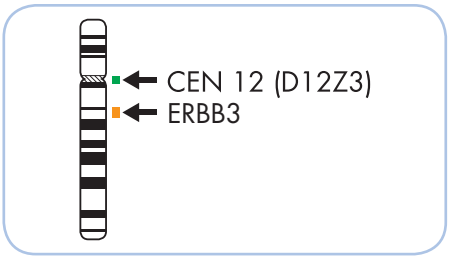
Recently it was shown in a retrospective study that responsiveness to Herceptin™ turned out to be more efficient if tumour cells show ERBB4 gene amplification.

References

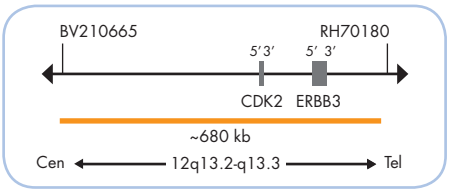
Alimandi M, et al. (1995) Oncogene 10: 1813-21.
Begnami MD, et al. (2011) J Clin Oncol 29: 3030-6.
Berghoff AS, et al. (2014) Breast J 23: 637-43.
Brockhoff G, et al. (2011) Acta Derm Venereol 91: 488-90.
Brunner K, et al. (2010) Anal Quant Cytol Histol 32: 78-89.
Kraus MH, et al. (1989) Proc Natl Acad Sci USA 86: 9193-7.
Lédel F, et al. (2014) Eur J Cancer 50: 656-62.
Plowman GD, et al. (1993) Proc Natl Acad Sci USA 90: 1746-50.
Sassen A, et al. (2008) Breast Cancer Res 10: R2.
Sassen A, et al. (2009) Breast Cancer Res 11: R50.
Zaczek A, et al. (2005) Histol Histopathol 20: 1005-15.
Zimonjic DB, et al. (1995) Oncogene 10: 1235-7.

Probe Description

The SPEC ERBB3/CEN 12 Dual Color Probe is a mixture of a green fluorochrome direct labeled CEN 12 probe specific for the alpha satellite centromeric region of chromosome 12 (D12Z3) and an orange fluorochrome direct labeled SPEC ERBB3 probe hybridizing distal and proximal to the human ERBB3 gene in the chromosomal region 12q13.2-q13.3.

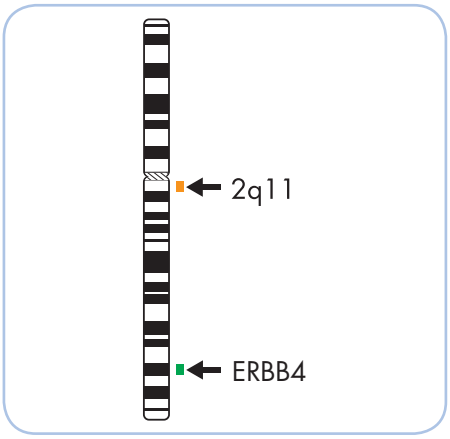


Ideogram of chromosome 12 indicating the hybridization locations.

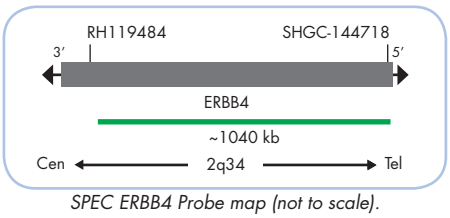


SPEC ERBB3 Probe map (not to scale).

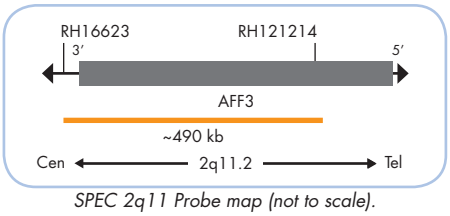
The SPEC ERBB4/2q11 Dual Color Probe is a mixture of a green fluorochrome direct labeled SPEC ERBB4 probe hybridizing to intronic sequences of the human ERBB4 gene in the chromosomal region 2q34 and an orange fluorochrome direct labeled SPEC 2q11 probe. The SPEC 2q11 probe is specific for the AFF3 (AF4/FMR2 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 ERBB4 Probe map (not to scale).



SPEC 2q11 Probe map (not to scale).

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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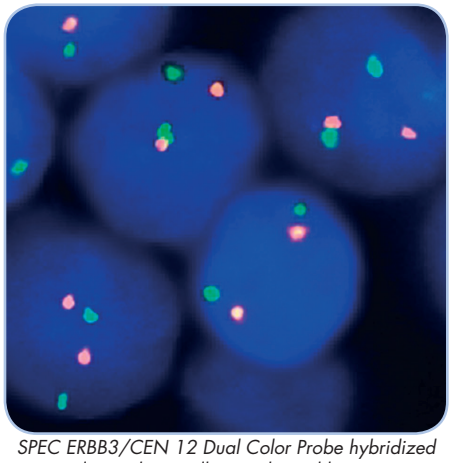
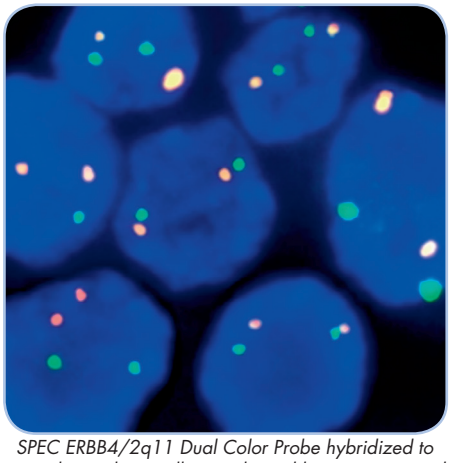
Results

Using the SPEC ERBB3/CEN 12 Dual Color Probe in a normal interphase nucleus, two orange and two green signals are expected. In a cell with amplification of the ERBB3 gene locus, multiple copies of the orange signal or orange signal clusters will be observed.

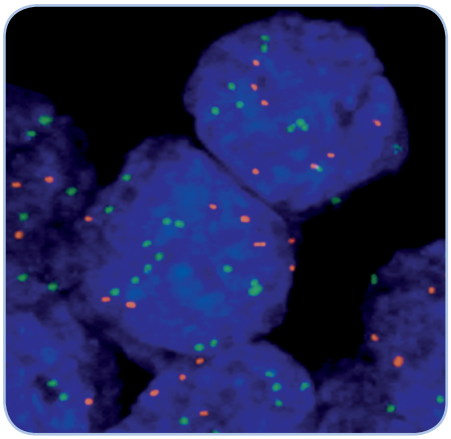
Using the SPEC ERBB4/2q11 Dual Color Probe in a normal interphase nucleus, two green and two orange signals are expected. In a cell with amplification of the ERBB4 gene locus, multiple copies of the green signal or green signal clusters will be observed.



SPEC ERBB3/CEN 12 Dual Color Probe hybridized to normal interphase cells as indicated by two orange and two green signals in each nucleus.



SPEC ERBB4/2q11 Dual Color Probe hybridized to normal interphase cells as indicated by two green and two orange signals in each nucleus.



Breast cancer tissue section with amplification of the ERBB4 gene (green), SPEC 2q11 (orange).

Image kindly provided by Prof. Brockhoff, Regensburg, Germany.

Prod. No.	Product	Label	Tests* (Volume)
Z-2056-200	ZytoLight SPEC ERBB3/CEN 12 Dual Color Probe CE IVD	●/●	20 (200 µl)
Z-2057-200	ZytoLight SPEC ERBB4/2q11 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.*

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