ZytoDot® 2C SPEC ERG Break Apart Probe

CE IVD

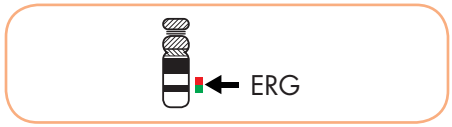
Background

The ZytoDot® 2C SPEC ERG Break Apart Probe is designed to detect aberrations involving the ERG gene at 21q22.2 frequently found in prostate cancers.
ERG (ETS-related gene) rearrangements have been observed in 40-60% of prostate cancers identified via prostate-specific antigen (PSA) screening. The most common aberration affecting ERG is the interstitial deletion of about 3 Mb at the chromosomal region 21q22 found in 90% of the cases. This deletion leads to the fusion of the hormonally regulated promoter of the TMPRSS2 (transmembrane protease, serine 2) gene to the coding region of ERG, resulting in overexpression of the ERG transcription factor. However, about 10% of the ERG rearranged prostate cancer cases show alternative fusions, as e.g. SLC45A3-ERG or NDRG1-ERG.
Several studies detected associations of ERG rearrangements with histomorphologic features as well as characteristic copy number gains, and gene expression signatures, defining a distinct sub-class of prostate cancers with unfavorable prognosis. Hence, the evaluation of the ERG rearrangement status in tissue or urine samples by CISH might be of diagnostic and prognostic relevance.
EWSR1-ERG gene fusions present in about 10% of patients with Ewing sarcoma may result from complex genomic rearrangements and may therefore not be detected by CISH analysis or may result in a non-classical translocation signal pattern.

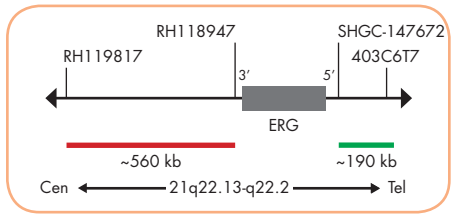
References
Esgueva R, et al. (2010) Mod Pathol 23: 539-46.
Maire G, et al. (2008) Cancer Genet Cytogenet 181: 81-92.
Nam RK, et al. (2007) Br J Cancer 97: 1690-5.
Perner S, et al. (2006) Cancer Res 66: 8337-41.
Pflueger D, et al. (2009) Neoplasia 11: 804-11.
Tomlins SA, et al. (2005) Science 310: 644-8.

Probe Description

The ZytoDot® 2C SPEC ERG Break Apart Probe is a mixture of a Digoxigenin-labeled and a Dinitrophenyl-labeled probe hybridizing to the long arm of chromosome 21. The DNP- labeled probe hybridizes proximal to the ERG gene breakpoint region at 21q22.13-q22.2, the DIG-labeled probe hybridizes distal to the ERG gene breakpoint region at 21q22.2.



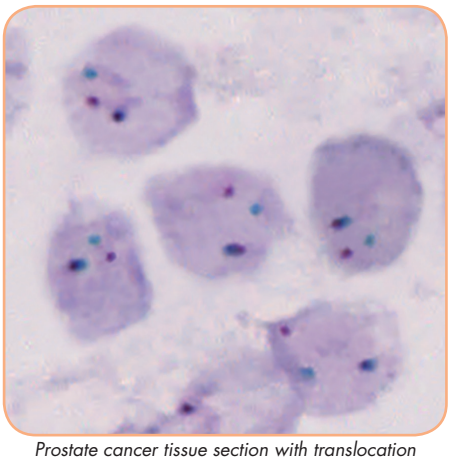
Ideogram of chromosome 21 indicating the hybridization locations.



SPEC ERG Probe map (not to scale).

Results

In an interphase nucleus of a normal cell lacking an aberration involving the 21q22.13-q22.2 band, using the ZytoDot® 2C CISH Implementation Kit, two red/green fusion signals are expected representing the two normal (non-rearranged) 21q22.13-q22.2 loci.
A 21q22.13-q22.2 locus affected by a 21q22.2 deletion resulting in the TMPRSS2-ERG fusion is indicated by the loss of one green signal.
A signal pattern consisting of one red/green fusion signal, a separate green, and a separate red signal indicates an ERG translocation without involvement of TMPRSS2 (e.g. SLC45A3-ERG).



Prostate cancer tissue section with translocation affecting the 21q22.13-q22.2 locus as indicated by one non-rearranged red/green fusion signal, one red signal, and one separate green signal indicating the translocation.

Prod. No.	Product	Label	Tests* (Volume)
C-3058-400	ZytoDot 2C SPEC ERG Break Apart Probe CE IVD	Digoxigenin/DNP	40 (400 µl)
Related Products			
C-3044-40	ZytoDot 2C CISH Implementation Kit CE IVD Incl. Heat Pretreatment Solution EDTA, 500 ml; Pepsin Solution, 4ml; 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.*

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186