

ZytoLight® SPEC ERG Dual Color Break Apart Probe

Background

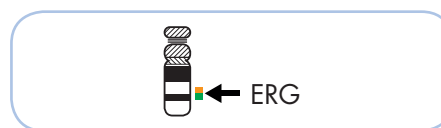
The *ZytoLight*® SPEC ERG Dual Color Break Apart Probe is designed to detect aberrations involving the ERG gene at 21q22.2 frequently detected in prostate cancers. ERG (ETS-related gene) rearrangements have been observed in 40-60% of prostate cancers identified via prostate-specific antigen (PSA) screening. 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 FISH 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 FISH analysis or may result in a non-classical translocation signal pattern.

References

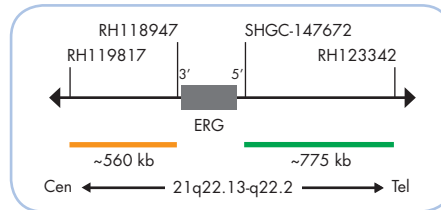
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- Maire G, et al. (2008) *Cancer Genet Cytogenet* 181: 81-92.
- Nam RK, et al. (2007) *Br J Cancer* 97: 1690-5.
- Perner S, et al. (2006) *Cancer Res* 66: 8337-41.
- Pflueger D, et al. (2009) *Neoplasia* 11: 804-11.
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Probe Description

The SPEC ERG Dual Color Break Apart Probe is a mixture of two direct labeled probes hybridizing to the long arm of chromosome 21. The orange fluorochrome direct labeled probe hybridizes at 21q22.13-q22.2 proximal to the ERG gene breakpoint region, the green direct labeled probe hybridizes at 21q22.2 distal to the ERG gene breakpoint region.



Ideogram of chromosome 21 indicating the hybridization locations.



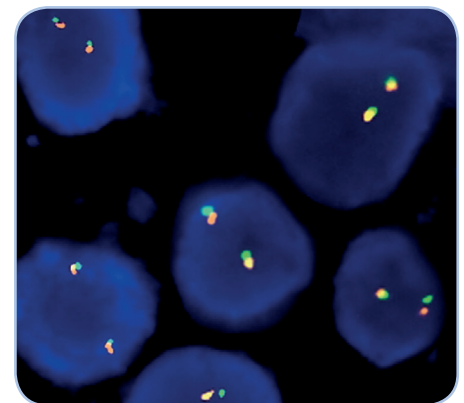
SPEC ERG Probe map (not to scale).

Results

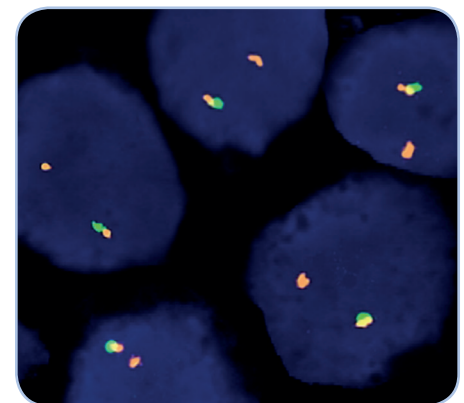
In an interphase nucleus of a normal cell lacking an aberration involving the 21q22.13-q22.2 band, two orange/green fusion signals are expected representing the two normal (non-rearranged) 21q22.13-q22.2 loci.

One 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 orange/green fusion signal, a separate green, and a separate orange signal indicates an ERG translocation without involvement of *TMPRSS2* (e.g. *SLC45A3-ERG*).



SPEC ERG Dual Color Break Apart Probe hybridized to normal interphase cells as indicated by two orange/green fusion signals per nucleus.



Prostate cancer tissue section with interstitial deletion of the chromosomal region 21q22.2 resulting in the *TMPRSS2-ERG* fusion as indicated by the loss of one green signal.

Prod. No.	Product	Label	Tests* (Volume)
Z-2138-200	<i>ZytoLight</i> SPEC ERG Dual Color Break Apart Probe CE IVD	●/●	20 (200 µl)
Related Products			
Z-2028-20	<i>ZytoLight</i> 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/DuraText-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.