

# ZytoLight® SPEC ERG/TMPRSS2 TriCheck™ Probe



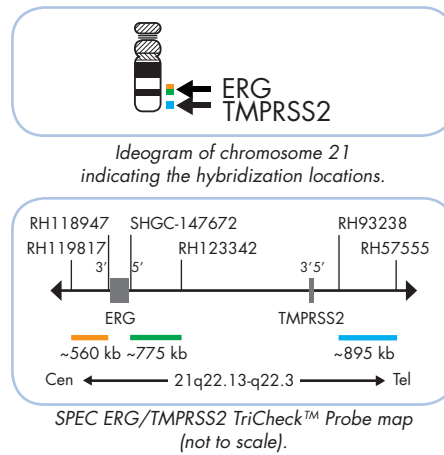
## Background

The ZytoLight® SPEC ERG/TMPRSS2 TriCheck™ Probe is designed to detect deletions between the ERG and the TMPRSS2 gene at 21q22 resulting in the TMPRSS2-ERG fusion. Furthermore, the triple color approach allows the detection of other translocations affecting either of these genes. 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. The deleted fragment is sometimes observed as insertion on other chromosomes. However, about 10% of the ERG rearranged prostate cancer cases show alternative fusions, as e.g. SLC45A3-ERG. On the other hand non-ERG translocations fusing TMPRSS2 to other ETS family members, as e.g. TMPRSS2-ETV1, have been found in a few percent of these malignancies. 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 TMPRSS2-ERG rearrangement status in tissue or urine samples by Fluorescence *in situ* Hybridization might be of diagnostic and prognostic relevance.

**References**  
Esgueva R, et al. (2010) Mod Pathol 23: 539-46.  
Nam RK, et al. (2007) Br J Cancer 97: 1690-5.  
Perner S, et al. (2006) Cancer Res 66: 8337-41.  
Tomlins SA, et al. (2005) Science 310: 644-8.

## Probe Description

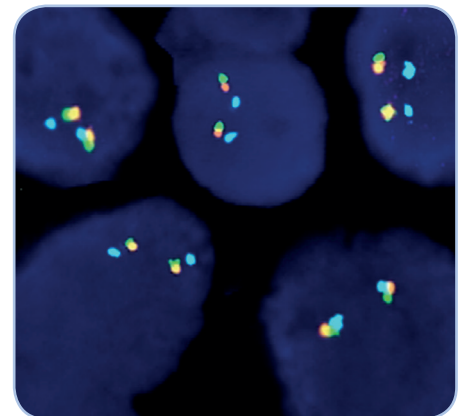
The SPEC ERG/TMPRSS2 TriCheck™ Probe is a mixture of three direct labeled probes hybridizing to the chromosomal regions 21q22.13-q22.3. The orange fluorochrome direct labeled probe hybridizes at 21q22.13-q22.2 proximal to the ERG gene breakpoint region, the green fluorochrome direct labeled probe hybridizes at 21q22.2 distal to that region, and the blue fluorochrome direct labeled probe hybridizes at 21q22.3 distal to the TMPRSS2 gene region.



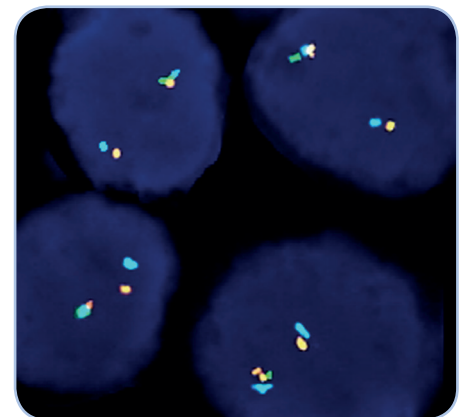
## Results

In a normal interphase nucleus, two orange/green fusion signals and two blue signals in close proximity of the respective fusion signals are expected representing two normal (non-rearranged) 21q22.13-q22.3 loci. One 21q22 locus affected by a 21q22.2 deletion resulting in the TMPRSS2-ERG fusion is indicated by one separate orange signal co-localizing with one blue signal, and the loss of one green signal.

An ERG translocation without involvement of TMPRSS2 is indicated by a separated orange signal and a blue signal co-localizing with the separate green signal. A non-ERG translocation affecting TMPRSS2 is indicated by a separated blue signal not co-localizing with the ERG fusion signal.



SPEC ERG/TMPRSS2 TriCheck Probe hybridized to normal interphase cells as indicated by two orange/green fusion signals and two blue signals in close proximity of the respective fusion signals.



Prostate cancer tissue section with one 21q22 locus affected by an interstitial deletion of the chromosomal region 21q22.2 resulting in the TMPRSS2-ERG fusion as indicated by one separate orange signal co-localizing with one blue signal, and the loss of one green signal.

| Prod. No.               | Product   | Label | Tests* (Volume) |
|-------------------------|---|-------|-----------------|
| Z-2135-200              | ZytoLight SPEC ERG/TMPRSS2 TriCheck Probe CE IVD  | ●/●/● | 20 (200 µl)     |
| <b>Related Products</b> |   |       |                 |
| Z-2028-20               | ZytoLight FISH-Tissue Implementation Kit CE IVD<br>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.