



## Prostatic Adenocarcinoma: Update on Novel Prostate Marker ERG

### Background

The TMPRSS2-ERG gene rearrangement is the most common chromosomal abnormality in prostate cancer (50-70% of prostate cancers) and is highly specific for the detection of prostate cancer. There is a new immunohistochemical stain (ERG) that stains the oncoprotein produced by this gene rearrangement with 99.9% specificity. This may be an added weapon in the arsenal to detect prostate cancer.

### ERG Immunohistochemistry (IHC)

FISH has been used to detect the TMPRSS2-ERG gene rearrangement. A new IHC marker, ERG, is specific for the oncoprotein produced by the TMPRSS2-ERG gene rearrangement. IHC is easier, faster and less expensive than FISH and this new immunostain may be a new marker for prostatic adenocarcinoma as well as a way to identify a clinically significant subset of prostate cancer patients.

### Frequency of ERG in Prostate Cancer

<b>Sensitivity</b>	<b>44.83%</b>
<b>Specificity</b>	<b>99.99%</b>
<b>PPV</b>	<b>84.17%</b>
<b>NPV</b>	<b>99.93%</b>

### ERG and Prostate Cancer

ERG is specific to prostate cancer and may be used to determine the origin of an unknown primary as prostatic. ERG stains vessels, but rarely any other types of tissue.

ERG may be used to diagnose cancer in challenging prostate biopsies with limited cancer or atypical small acinar proliferations.

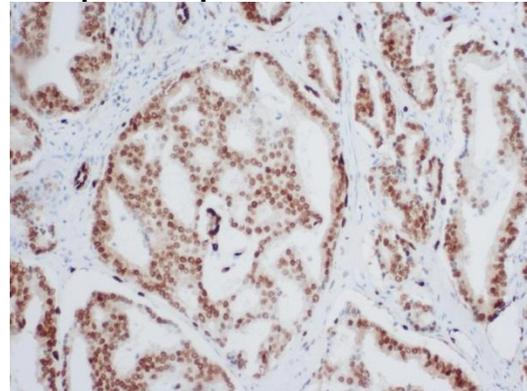
ERG does not show definitive correlation with Gleason Score or tumor stage.

### ERG and HGPIN

ERG may help to stratify patients diagnosed with HGPIN by risk of subsequent cancer. ERG is frequently expressed in glands of HGPIN and

suggests a higher association with ERG-positive cancer in these patients.

### ERG positive prostate cancer



### ERG and Benign Prostate

ERG may rarely be seen in benign prostatic glands. Typically the benign glands are adjacent to or intermingled with carcinoma glands.

### Clinical Implications

At TOPA, immunostaining for ERG is utilized for diagnostically challenging biopsies, in which the morphologic features alone are insufficient for definitive diagnosis. The ERG antibody is more specific than racemase (AMACR), and is a valuable supplement to the triple stain traditionally used to resolve problematic cases.

The clinical role of ERG in the risk stratification of patients with HGPIN is not well established. We will closely monitor the evolving literature on this subject, as we continue to gain experience with the use of ERG in prostate pathology.

For additional information, please call Danielle Westfall, MD, Director of Urologic Pathology at TOPA Diagnostics.

### References

1. Am J Surg Pathol. 2011;35:608-614
2. Prostate Cancer and Prostatic Diseases. 2010;13:228-237.