

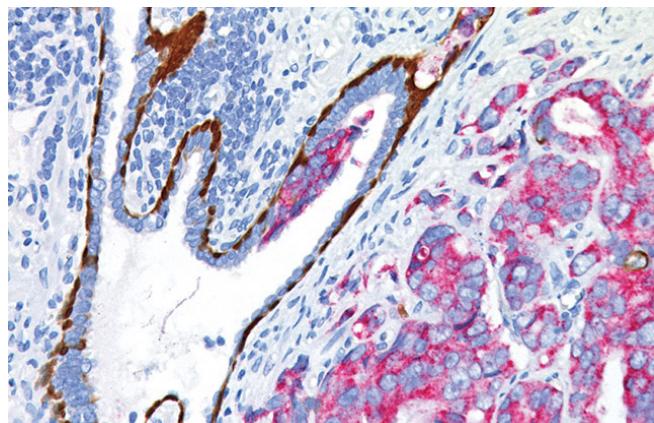
# Classification and Cocktails: Prostate Cocktail

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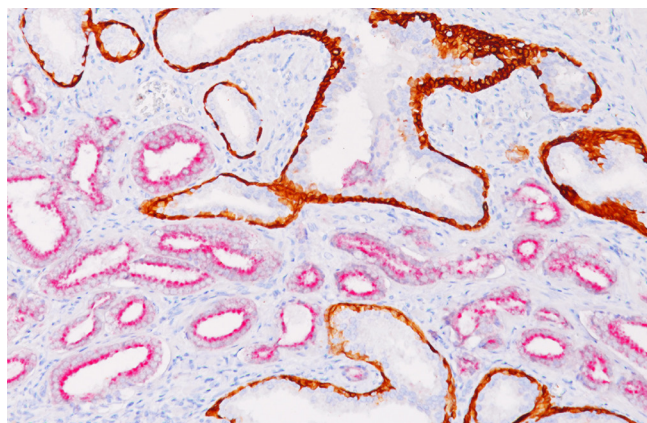
Examining and diagnosing small prostate needle biopsies can be a difficult task. A final diagnosis of prostate carcinoma is based on histomorphological features.<sup>1</sup> The difficulty with examining needle biopsy stems not only from the small amount of tissue available, but also from the fact that prostate biopsies often identify only a few malignant lesions and several histological benign “mimics”.<sup>2</sup> These mimics can range from seminal vesicles, Cowper's glands, and atrophy to adenosis (atypical adenomatous hyperplasia), basal cell hyperplasia, and even radiation atypia.<sup>1,2</sup> Diagnosis can be complicated further when cancerous tissue is admixed with benign mimics.<sup>1</sup> Underdiagnosis of a small foci of malignant lesions or overdiagnosis of a cancer-mimicking benign lesions can occur and cause adverse effects for patients. Immunohistochemistry helps in solving ambiguity and in avoiding underdiagnosis or overdiagnosis.

Biocare offers an IVD-labeled prostate cocktail (CK HMW + p63 + AMACR) that may help aid in the interpretation of troublesome prostate lesions. The underlying concept of the prostate cocktail is to identify basal cells, found only in benign tissues, and label cancerous cells. High molecular weight cytokeratins are expressed in a variety of normal and neoplastic epithelial tissues.<sup>3</sup> In prostate, CK HMW [34 $\beta$ E12] has been shown to be useful markers of basal cells of normal glands and prostatic intraepithelial neoplasia (PIN), a precursor lesion to prostatic adenocarcinoma; whereas invasive prostatic adenocarcinoma typically lacks a basal cell layer.<sup>1,3,4</sup> p63 is detected in nuclei of the basal epithelium in normal prostate glands; however, it is not expressed in malignant tumors of the prostate.<sup>7</sup> AMACR, also known as  $\alpha$ -methylacyl coenzyme A racemase, is a peroxisomal and mitochondrial enzyme that plays a role in bile acid synthesis and  $\beta$ -oxidation of branched chain fatty acids.<sup>8</sup> In immunohistochemistry, prostate glands involved in PIN have been found to express AMACR, whereas AMACR is nearly undetectable in benign glands.<sup>9,10</sup> Using innovative multiplex detection systems, such as Biocare's Mach 2 Double Stain 2 polymer, the cocktailed antibodies can be targeted and labeled simultaneously with two separate enzymes. With this polymer, the heavy weight keratins and p63 mouse antibodies are labeled with an HRP enzyme and visualized with DAB, while the rabbit antibody AMACR is labeled with an AP enzyme and visualized with a Fast Red chromogen.

The application of Biocare's multiplex cocktails may be particularly beneficial in prostate cancer diagnosis. Needle biopsies supply limited tissue available for testing. The ability for ambiguous prostate lesions to be identified and observed on a single tissue section may lead to a successful diagnosis, as application of individual antibodies on separate slides may cause loss of atypical glands by further sectioning.<sup>1,2</sup> It is suggested by Chougani *et al.* that Biocare's prostate cocktail can reduce the chance of overdiagnosis of benign lesions as malignant and underdiagnosis of carcinomas as benign and reduces the chances of repeat biopsy.



Prostate cancer and prostatic intraepithelial neoplasia stained with Biocare's prostate cocktail.



Prostate lesion labeled with Biocare's CK HMW + p63 + AMACR exhibiting benign basal cell [brown] and prostatic adenocarcinoma [red] labeling.

Interested in accentuating your antibody menu with Biocare's Prostate cocktail (CK HMW + p63 + AMACR)? This cocktail is available as a standard predilute in a variety of sizes and can be used both manually and on most automated IHC instrumentation. For more information, please call 1-800-799-9499 or visit our website: <https://biocare.net/product/ck-hmw-p63-amacr-rm-2/>

## CK HMW + p63 + AMACR Chart

Antibody	anti-CK HMW	anti-p63	Anti-AMACR
Clone	34 E12	4A4	13H4
Source	Mouse Monoclonal	Mouse Monoclonal	Rabbit Monoclonal
Isotype	IgG1/kappa	IgG2a/kappa	IgG
Epitope/Antigen	CK HMW	p63	AMACR
Cellular Localization	Cytoplasmic	Nuclear	Cytoplasmic

### References

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