

Immunohistochemistry

p40 antibody (Δ Np63)



BC28: The monoclonal antibody against p40 (Δ Np63)

A highly specific and sensitive detection of basal cell and squamous cell carcinomas

In recent years, several studies have shown that p63, the standard marker for pulmonary squamous cell carcinoma, has shown an excellent sensitivity of nearly 100 %, but is not fully specific for squamous cell differentiation [1]. Therefore, since 2012, a truncated form of the p63 protein, the p40 (or Δ Np63) protein, has been discussed and recommended [2,3]. p40 exhibits the same sensitivity as p63, but has a much higher specificity for squamous cell carcinoma of the lung (see Table 1).

The authors conclude that the use of the p40 marker may be superior to p63 detection in the diagnosis of pulmonary squamous cell carcinoma of the lung is preferable. A publication from Histopathology [5] further describes that detection of p40 is also superior to that of p63 in imaging basal cells in the prostate.

► **Table 1: p40 and p63 expression in adeno- and squamous cell carcinomas of the lung and in large cell lymphomas (according to Bishop *et al.* 2012).**

| Tissue | p40 Positivity | p63 Positivity |
|--------------------------------------|----------------|----------------|
| Lung, squamous cell carcinoma (n=81) | 100 % | 100 % |
| Lung, Adenocell carcinoma (n=237) | 3 % | 31 % |
| Large cell lymphomas (n=152) | 0 % | 54 % |

* In all cases, less than 5% of tumor cells p40 positive.

In the majority of studies published to date, a rabbit polyclonal antibody has been used for p40 detection. This stains nuclear as expected, but in many cases also shows slight cytoplasmic staining. Although this background staining is usually diagnostically irrelevant, it has nevertheless led to the fact that some laboratories take a critical view of p40 immunohistochemistry.

As an alternative, Zytomed Systems offers a CE/IVD-classified mouse monoclonal antibody against the p40 protein. This antibody leads to the same staining intensity as the polyclonal antibody for the

same protocol, but in contrast to the polyclonal antibody it shows a clearly demarcated nuclear staining (Figs. 1 and 4).

Immunohistochemistry on formalin-fixed paraffine sections works reproducibly with the p40 monoclonal antibody using various heat pretreatments (HIER). As with many other antibodies, HIER in citrate buffer is gentler on tissue, while HIER in alkaline EDTA buffer results in stronger signals. In the example opposite (Figs. 3 and 4), the antibody was therefore used at a higher dilution after EDTA pretreatment.

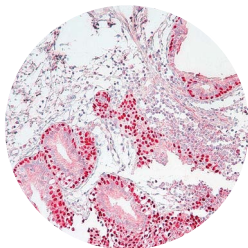


Figure 1: p40 detection on prostate tissue with polyclonal p40 antibody
Pretreatment (HIER) in EDTA buffer pH 9.0
RBK054, 1:200
AP-Polymer with Permanent AP Red

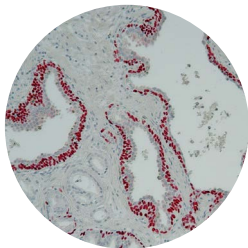


Figure 2: p40 detection of prostate tissue with monoclonal p40 antibody
Pretreatment (HIER) in Citrate buffer pH 6.0
MSK097, 1:50, AP Polymer with Permanent AP Red

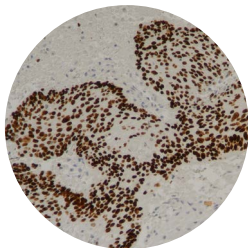


Figure 3: p40 detection of pulmonary Squamous cell carcinoma
Pretreatment (HIER) in EDTA buffer pH 9.0
MSK097, 1:100 HRP-Polymer with DAB Chromogen

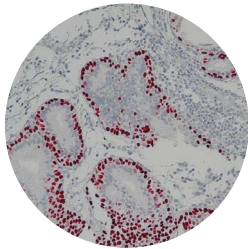



Figure 4: p40 detection of prostate tissue with monoclonal p40 antibody
Pretreatment (HIER) in EDTA buffer pH 9.0
MSK097, 1:200, AP Polymer with Permanent AP Red

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► **Product Information**

| Description | Status | Pretreatment | Dilution | Amount | Order. No |
|---|--------|-----------------------------|--------------|--------|-----------|
| p40 (ΔNp63) Clone: BC28 Host: Mouse  Zytomed Systems | CE/IVD | HIER in Citratpuffer pH 6,0 | Ready-to-use | 16 ml | BMS050 |
| | | | | 6 ml | MSG097 |
| | | | 1:50 – 1:100 | 1 ml | MSK097 |
| | | | | 0.5 ml | MSK097-05 |



The p40 antibody with the BC28 clone is recognised for its superior performance, as demonstrated by NordiQC results. The product Mouse anti-p40 (ΔNp63) [BC28] give rise to optimal and good staining results with four independent interlaboratory tests (NordiQC) from 2015 till 2023, evaluating the concentrate (REF MSK097) and ready-to-use format (REF BMS050, MSG097), respectively.

Further details can be found in the NordiQC publication at https://www.nordiqc.org/downloads/assessments/171_10.pdf.

► **Literature**

- [1] Au NH *et al.* Appl Immunohistochem Mol Morphol 12:240-247, 2004
- [2] Nonaka D. Am J Surg Pathol 36:895-899, 2012
- [3] Bishop JA *et al.* Mod Pathol; 25:405-415, 2012
- [4] Pelosi G *et al.* J Thorac Oncol 7:281-290, 2012
- [5] Sailer V *et al.* Histopathol 63:50-56, 2013



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