

Meeting the Mark: Desmoglein 3 + p40 + Napsin A

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Lung cancer is the leading cause of cancer-related deaths in the United States and worldwide, with non-small cell lung cancer (NSCLC) accounting for 80% of lung cancers.¹ NSCLC's predominate subtypes are adenocarcinomas (ADC) and squamous cell carcinomas (SCC).¹ Therapy of NSCLC depends on accurate histological classifications of these two subclassifications.¹ Differentiating the two can be difficult, especially when most lung tissue samples are collected through fine needle aspiration biopsies.¹ Small biopsies such as this may only provide a few tumorous cells or provide poorly differentiated cell morphologies.¹ Immunohistochemistry (IHC) examination may provide clarification and assist in classifying NSCLC.

Biocare's Desmoglein 3 + p40 + Napsin A antibody cocktail is composed of two mouse monoclonal antibodies and a rabbit monoclonal antibody intended for use in the qualitative identification of Desmoglein 3, p40 and Napsin A proteins by IHC. Desmoglein 3 (DSG3) is a calcium-binding transmembrane glycoprotein component of desmosomes in vertebrate epithelial cells.^{2,3} Desmoglein exhibits membranous expression and connects with cytokeratins through desmoplakins and plakoglobin. DSG3 is particularly important in the cellular adhesion of squamous epithelium, and as a result, it is often highly expressed in various squamous cell carcinomas (SqCC).⁴ Another highly specific SqCC marker is p40. Biocare's p40 clone [BC28] is a nuclear marker that recognizes an epitope unique to p40, which may result in diminished reactivity in lung ADC and increased specificity.⁵⁻⁸ This combination of membrane and nuclear staining of DSG3 and p40, respectively, may increase overall sensitivity for lung SCC and, in some cases, aid the pathologist with difficult specimens.^{5,9} The third component, Napsin A, is a pepsin-like aspartic proteinase that is expressed in most lung ADCs.⁴⁻⁶ Studies have shown that Napsin A is a more sensitive and specific marker than TTF-1 and is extremely specific for lung ADC versus lung SCC.⁴⁻⁶ Using innovative multiplex detection systems, such as Biocare's Mach 2 Double Stain 2 polymer, this cocktail of antibodies can be targeted and labeled simultaneously with two separate enzymes. With this polymer, the membranous (DSG3) and nuclear (p40) mouse antibodies are labeled with an HRP enzyme and visualized with DAB, while the rabbit antibody (Napsin A) is labeled with an AP enzyme and visualized with a Fast Red chromogen.

Lung carcinomas, particularly NSCLCs, are a mixed group of tumors exhibiting differences at the histologic, immunophenotypic, and molecular genetic levels.¹ The accurate classification of NSCLC is becoming increasingly important due to advancements in therapies.¹ Research has shown triple marker cocktails have comparable sensitivities and specificities to individual markers.¹ *Ao et al.* found Biocare's cocktails to be cost-efficient and may aid in conserving valuable tumor tissues during the immunohistochemical study and the subclassification of NSCLCs.¹

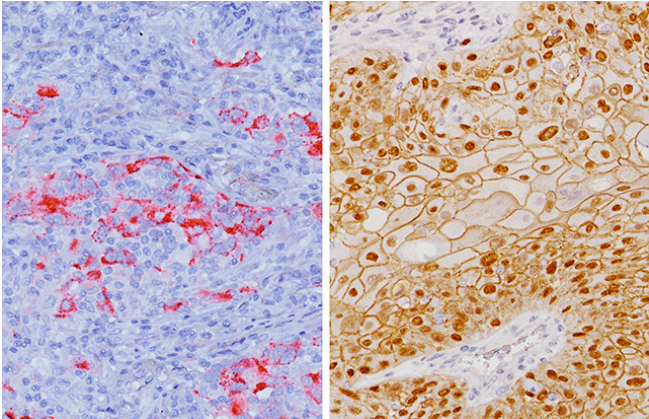
Looking to maximize the diagnostic ability of a single needle biopsy? Biocare's Desmoglein 3 + p40 + Napsin A cocktail may provide an option of tissue preservation, while still maintaining sensitivity and specificity to aid in NSCLC classification. This cocktail is available in ready-to-use format and 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/desmoglein-3-p40-m-napsin-rm/> and <https://biocare.net/product-category/multiplex-ihc-antibodies/>.

Desmoglein 3 + p40 + Napsin A Chart

Antibody	anti-Desmoglein	anti-p40	anti-Napsin A
Clone	BC11	BC28	BC15
Source	Mouse Monoclonal	Mouse Monoclonal	Rabbit Monoclonal
Isotype	IgG1	IgG1	IgG
Epitope/Antigen	Desmoglein 3	amino acids 5-17	Napsin A
Cellular Localization	Membranous	Nuclear	Cytoplasmic (granular)



Lung adenocarcinoma stained with Desmoglein (-), p40 (-) and Napsin A (+) (left) and lung squamous cell carcinoma (right) stained with Desmoglein (+), p40 (+) and Napsin A (-)

References

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