NKX2.1 Antibody for IHC / Pulmonary Epithelial Marker [clone MSVA-312R] (V6121)

Catalog No.	Formulation	Size
V6121-100UG	Antibody in 1X PBS with 0.05% BSA, 0.05% sodium azide	100 ug
V6121-20UG	Antibody in 1X PBS with 0.05% BSA, 0.05% sodium azide	20 ug

Recombinant RABBIT MONOCLONAL

Bulk quote request

Species Reactivity	Human
Format	Purified
Host	Rabbit
Clonality	Recombinant Rabbit Monoclonal
Isotype	Rabbit IgG, kappa
Clone Name	MSVA-312R
UniProt	P43699
Localization	Nucleus
Applications	Immunohistochemistry (FFPE) : 1:100-1:200
Limitations	This NKX2.1 Antibody for IHC is available for research use only.

NKX2.1 Antibody for IHC Tissue Microarray (TMA). Immunohistochemistry analysis of NK2 homeobox 1 NKX2-1, also known as TTF-1, in formalin-fixed paraffin-embedded human normal and cancer tissue microarrays using recombinant rabbit monoclonal NKX2.1 antibody clone MSVA-312R. Tissue microarray (TMA) staining with HRP-DAB brown chromogen demonstrates strong nuclear localization in pulmonary epithelial lineage cells, including lung respiratory epithelium, and in thyroid follicular epithelial cells, while most other tissues remain largely negative. Within tumor tissue microarrays, robust nuclear staining is observed in lung adenocarcinoma and other pulmonary epithelial tumors, supporting its use as a pulmonary epithelial marker and diagnostic indicator of tumors of lung origin. Evaluation across large TMA panels enables direct comparison of NKX2-1 expression across diverse tissue types under standardized conditions. The observed staining patterns align with reported NKX2-1 expression profiles in the Human Protein Atlas.

Description

Thyroid transcription factor 1 (NKX2-1) is a lineage-restricted nuclear homeobox transcription factor that plays a central

role in the development and differentiation of respiratory epithelium and thyroid follicular epithelial cells. NKX2.1 antibody, also known as TTF-1 antibody or Thyroid transcription factor 1 antibody, recognizes a lineage-associated homeobox transcription factor expressed in pulmonary epithelial cells and thyroid follicular epithelium. The NKX2.1 Antibody for IHC / Pulmonary Epithelial Marker (clone MSVA-312R) is a recombinant rabbit monoclonal antibody designed for immunohistochemical detection of NKX2-1 in formalin-fixed, paraffin-embedded tissues, enabling clear visualization of nuclear NKX2-1 expression within pulmonary epithelial lineage cells.

NKX2-1 functions as a master transcriptional regulator of pulmonary epithelial differentiation and lung morphogenesis. In normal lung tissue, NKX2-1 is strongly expressed in respiratory epithelium, particularly in alveolar epithelial cells including type II pneumocytes as well as bronchiolar epithelial cells. Because NKX2-1 expression is largely restricted to the pulmonary epithelial lineage within the lung, immunohistochemical detection of NKX2-1 has become one of the most widely used markers for identifying pulmonary epithelial cells and tumors derived from respiratory epithelium. The NKX2.1 Antibody for IHC / Pulmonary Epithelial Marker therefore serves as a highly informative tool for detecting pulmonary epithelial lineage differentiation in both normal lung tissue and pulmonary neoplasms.

In diagnostic immunohistochemistry, NKX2-1 staining is particularly valuable for evaluating lung adenocarcinoma and other pulmonary epithelial tumors. Strong nuclear staining in malignant epithelial cells reflects the pulmonary epithelial origin of many primary lung cancers and helps distinguish lung adenocarcinoma from metastatic carcinomas involving the lung that originate from non-pulmonary tissues. Because NKX2-1 expression reflects differentiation along the respiratory epithelial lineage, antibodies targeting NKX2-1 are routinely incorporated into immunohistochemistry panels used in pulmonary pathology and lung tumor classification.

Large-scale human tissue microarray (TMA) analysis further illustrates the lineage specificity of NKX2-1 expression and provides strong experimental support for its use as a pulmonary epithelial marker. In comprehensive normal tissue microarray panels containing dozens of human tissues, strong nuclear NKX2-1 staining is consistently observed in lung respiratory epithelium and thyroid follicular epithelial cells, while the vast majority of other tissues remain negative. These human tissue microarray findings reinforce the highly restricted expression pattern expected for a pulmonary epithelial lineage transcription factor and highlight the specificity of NKX2-1 as a pulmonary epithelial cell marker.

Analysis of cancer tissue microarrays (TMAs) demonstrates similarly selective staining patterns in tumor specimens. Lung adenocarcinoma frequently shows strong nuclear NKX2-1 immunoreactivity consistent with pulmonary epithelial differentiation, whereas most non-pulmonary malignancies lack staining. Thyroid carcinomas may also demonstrate nuclear NKX2-1 positivity reflecting the transcription factor's role in thyroid epithelial differentiation. The combined results from normal tissue microarray and cancer tissue microarray studies highlight the diagnostic importance of NKX2-1 immunohistochemistry for identifying tumors derived from pulmonary epithelial lineage and thyroid epithelial tissues.

The recombinant rabbit monoclonal clone MSVA-312R antibody provides highly consistent nuclear staining of NKX2-1 in pulmonary epithelial cells and lung adenocarcinoma tissues in immunohistochemistry assays. Recombinant rabbit monoclonal antibody technology supports strong antigen recognition and highly reproducible staining performance in FFPE specimens. Because NKX2-1 is a nuclear transcription factor, immunohistochemical staining with NKX2.1 Antibody for IHC / Pulmonary Epithelial Marker typically produces a distinct nuclear staining pattern within alveolar epithelial cells, bronchiolar epithelial cells, and pulmonary epithelial tumor cells.

Overall, the NKX2.1 Antibody for IHC / Pulmonary Epithelial Marker (clone MSVA-312R) provides a powerful tool for detecting NKX2-1 expression in pulmonary epithelial cells, lung adenocarcinoma, and other tumors arising from respiratory epithelium. The staining patterns observed across large human tissue microarray panels and cancer tissue microarray datasets further confirm NKX2-1 as one of the most reliable pulmonary epithelial lineage markers used in modern diagnostic immunohistochemistry.

This antibody is also part of a broader collection of IHC antibodies validated by tissue microarray analysis, supporting consistent staining across normal and cancer tissues.

Application Notes

1. Optimal dilution of the NKX2-1/NK2 homeobox 1 antibody should be determined by the researcher.

2. This NKX2.1/NK2 homeobox 1 antibody is recombinantly produced by expression in CHO cells.

3. Manual Protocol: Freshly cut sections should be used (less than 10 days between cutting and staining). Heat-induced antigen retrieval for 5 minutes in an autoclave at 121oC in pH 7.8 Target Retrieval Solution buffer. Apply the antibody at a dilution of 1:150 at 37oC for 60 minutes. Visualization of bound antibody by the EnVision Kit (Dako, Agilent) according to the manufacturer's directions.

Immunogen

Recombinant full-length human NXK2-1 (TTF-1) protein was used as the immunogen for the NKX2.1 Antibody for IHC.

Storage

NKX2.1/NK2 homeobox 1 antibody with sodium azide - store at 2 to 8oC; antibody without sodium azide - store at -20 to -80oC.

Alternate Names

Thyroid transcription factor 1 antibody, TTF-1 antibody, NKX2-1 pulmonary epithelial marker antibody, Lung epithelial lineage marker antibody, Alveolar epithelial cell marker antibody