

# TTF-1

**TTF-1** (Thyroid Transcription Factor-1), also known as **NKX2.1**, is a **nuclear transcription factor** essential for the development and function of the **thyroid gland**, **lung**, and **ventral forebrain**. It is frequently used as an **immunohistochemical marker** in neuropathology and oncopathology.

## Function

TTF-1 plays a key role in regulating genes involved in:

- **Thyroid development and hormone production**
- **Lung morphogenesis and surfactant protein expression**
- **Brain development**, particularly in the **hypothalamus** and **pituitary gland**

## Diagnostic Utility

In pathology, TTF-1 is commonly used as a **marker of origin** for tumors, especially in the following contexts:

- **lung adenocarcinoma**: Strongly positive
- **thyroid carcinoma**: Positive in most types
- **posterior pituitary tumor**: Universally positive across subtypes, including:
  - **pituicytoma**
  - **granular cell tumor**
  - **spindle cell oncocytoma**

In PPTs, **diffuse nuclear positivity for TTF-1** helps distinguish them from other **sellar masses** such as **pituitary adenomas** or **craniopharyngiomas**.

## Interpretation in Immunohistochemistry

Marker	Expression in PPTs
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<b>TTF-1</b>	<input type="checkbox"/> Strong nuclear positivity
<b>Vimentin</b>	<input type="checkbox"/> Positive
<b>S100 protein</b>	<input type="checkbox"/> Often positive
<b>Cytokeratin</b>	<input type="checkbox"/> Negative
<b>Chromogranin A</b>	<input type="checkbox"/> Negative

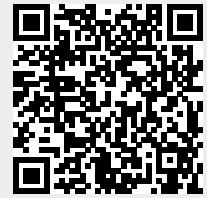
## Related Terms

- [immunohistochemistry](#)
- [pituitary gland](#)
- [posterior pituitary tumor](#)

- S100 protein
- vimentin
- Ki67

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