

## DESCRIPTION

<b>Species Reactivity</b>	Human
<b>Specificity</b>	Detects human Thymidine Kinase 1 Protein in direct ELISAs.
<b>Source</b>	Polyclonal Sheep IgG
<b>Purification</b>	Antigen Affinity-purified
<b>Immunogen</b>	<i>E. coli</i> -derived human Thymidine Kinase 1 protein Ser2-Asn234 Accession # P04183
<b>Formulation</b>	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied either lyophilized or as a 0.2 µm filtered solution in PBS.

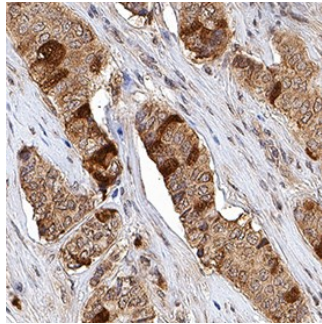
## APPLICATIONS

**Please Note:** Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

	Recommended Concentration	Sample
<b>Immunohistochemistry</b>	1-25 µg/mL	See Below
<b>Simple Western</b>	20 µg/mL	See Below

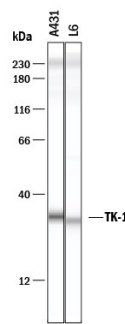
## DATA

### Immunohistochemistry



**Thymidine Kinase 1 in Human Breast Cancer Tissue.** Thymidine Kinase 1 was detected in immersion fixed paraffin-embedded sections of human breast cancer tissue using Sheep Anti-Human Thymidine Kinase 1 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF8180) at 1 µg/mL for 1 hour at room temperature followed by incubation with the Anti-Rabbit IgG VisUCyte™ HRP Polymer Antibody (Catalog # Catalog # VC003). Tissue was stained using DAB (brown) and counterstained with hematoxylin (blue). Specific staining was localized to cytoplasm in cancer cells. View our protocol for IHC Staining with VisUCyte HRP Polymer Detection Reagents.

### Simple Western



**Detection of Human and Rat Thymidine Kinase 1 by Simple Western™.** Simple Western lane view shows lysates of A431 human epithelial carcinoma cell line and L6 rat myoblast cell line, loaded at 0.2 mg/mL. A specific band was detected for Thymidine Kinase 1 at approximately 59 kDa (as indicated) using 20 µg/mL of Sheep Anti-Human Thymidine Kinase 1 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF8180). This experiment was conducted under reducing conditions and using the 12-230 kDa separation system.



## PREPARATION AND STORAGE

<b>Reconstitution</b>	Reconstitute at 0.2 mg/mL in sterile PBS.
<b>Shipping</b>	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
<b>Stability &amp; Storage</b>	<b>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</b> <ul style="list-style-type: none"> <li>• 12 months from date of receipt, -20 to -70 °C as supplied.</li> <li>• 1 month, 2 to 8 °C under sterile conditions after reconstitution.</li> <li>• 6 months, -20 to -70 °C under sterile conditions after reconstitution.</li> </ul>

**BACKGROUND**

Thymidine kinases are 2'-deoxythymidine kinases that phosphorylate deoxythymidine and generate deoxythymidine 5'-phosphate (1). Thymidine kinases have a key function in the synthesis of DNA and thereby in cell division, as they are part of the unique reaction chain to introduce deoxythymidine into the DNA. Two forms of thymidine kinase are present in mammalian cells, TK1 and TK2. TK1 is cell cycle-dependent and is present in the cytoplasm only in anticipation of cell division (2, 3); whereas TK2 is located in mitochondria and is cell cycle-independent (4). TK1 is synthesized by the cell during the S phase of cell division and is degraded after cell division is completed (5). TK1 normally occurs in tissue as a dimer and can be converted to more active tetrameric form by ATP binding (6). TK1 is feedback inhibited by thymidine triphosphate, the product of the further phosphorylation of thymidine (7). Because tumor cells replicate much more frequently than normal cells and requires faster DNA synthesis and higher TK1 activity, TK1 is a cancer marker especially for hematologic malignancies (8, 9). In clinical chemistry TK1 is used as a proliferation marker in the diagnosis, control of treatment and follow-up of malignant disease (10). In addition, thymidine kinase is required for the action of many antiviral drugs (11). The enzymatic activity of recombinant human TK1 is measured using a phosphatase-coupled method (12).

**References:**

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