

## DESCRIPTION

<b>Species Reactivity</b>	Human
<b>Specificity</b>	Detects human Osteopontin/OPN in direct ELISAs and Western blots. In direct ELISAs, approximately 8% cross-reactivity with recombinant rat Osteopontin and bovine Osteopontin is observed and less than 2% cross-reactivity with recombinant mouse OPN is observed.
<b>Source</b>	Polyclonal Goat IgG
<b>Purification</b>	Antigen Affinity-purified
<b>Immunogen</b>	Human milk-derived Osteopontin/OPN
<b>Endotoxin Level</b>	<0.10 EU per 1 µg of the antibody by the LAL method.
<b>Formulation</b>	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.

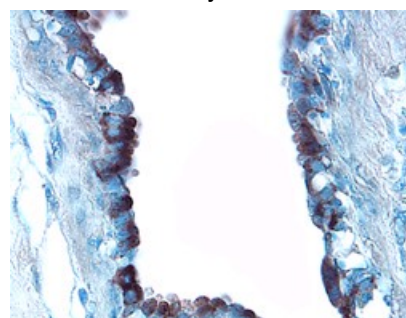
## APPLICATIONS

**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.

	<b>Recommended Concentration</b>	<b>Sample</b>
<b>Western Blot</b>	0.1 µg/mL	Recombinant Human Osteopontin/OPN (Catalog # 1433-OP)
<b>Immunohistochemistry</b>	5-15 µg/mL	See Below
<b>Neutralization</b>	Measured by its ability to neutralize Osteopontin/OPN-mediated adhesion of the HEK293 human embryonic kidney cell line. Hu, D.D. <i>et al.</i> (1995) J. Biol. Chem. <b>270</b> :26232. The Neutralization Dose (ND <sub>50</sub> ) is typically 2-6 µg/mL in the presence of 1 µg/mL Recombinant Human Osteopontin/OPN.	

## DATA

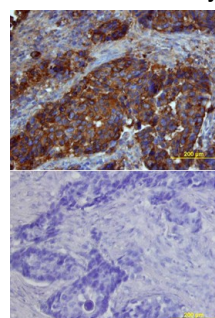
### Immunohistochemistry



#### Osteopontin/OPN in Human Breast Cancer Tissue.

Osteopontin/OPN was detected in immersion fixed paraffin-embedded sections of human breast cancer tissue using 8 µg/mL Goat Anti-Human Osteopontin/OPN Antigen Affinity-purified Polyclonal Antibody (Catalog # AF1433) overnight at 4 °C. Tissue was stained with the Anti-Goat HRP-DAB Cell & Tissue Staining Kit (brown; Catalog # CTS008) and counterstained with hematoxylin (blue). Specific labeling was localized to the surface of epithelial cells in the intralobular duct. View our protocol for [Chromogenic IHC Staining of Paraffin-embedded Tissue Sections](#).

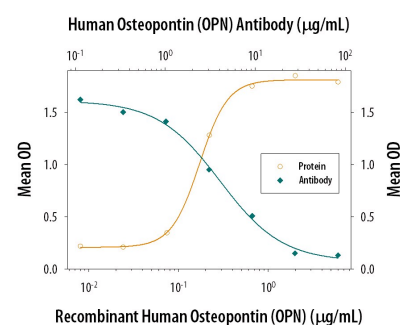
### Immunohistochemistry



#### Osteopontin/OPN in Human Breast Cancer Tissue.

Osteopontin/OPN was detected in immersion fixed paraffin-embedded sections of human breast cancer tissue using Goat Anti-Human Osteopontin/OPN Antigen Affinity-purified Polyclonal Antibody (Catalog # AF1433) at 15 µg/mL overnight at 4 °C. Tissue was stained using the Anti-Goat HRP-DAB Cell & Tissue Staining Kit (brown; Catalog # CTS008) and counterstained with hematoxylin (blue). Lower panel shows a lack of labeling if primary antibodies are omitted and tissue is stained only with secondary antibody followed by incubation with detection reagents. View our protocol for [Chromogenic IHC Staining of Paraffin-embedded Tissue Sections](#).

### Neutralization



#### Cell Adhesion Mediated by Osteopontin/OPN and Neutralization by Human Osteopontin/OPN Antibody.

Recombinant Human Osteopontin/OPN (Catalog # 1433-OP), immobilized onto a microplate, supports the adhesion of the HEK293 human embryonic kidney cell line in a dose-dependent manner (orange line). Adhesion elicited by Recombinant Human Osteopontin/OPN (1 µg/mL) is neutralized (green line) by increasing concentrations of Goat Anti-Human Osteopontin/OPN Antigen Affinity-purified Polyclonal Antibody (Catalog # AF1433). The ND<sub>50</sub> is typically 2-6 µg/mL.

## 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.
<b>Stability &amp; Storage</b>	<p><b>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</b></p> <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

Osteopontin (OPN, previously also referred to as transformation-associated secreted phosphoprotein, bone sialoprotein I, 2ar, 2B7, early T lymphocyte activation 1 protein, minopotin, calcium oxalate crystal growth inhibitor protein), is a secreted, highly acidic, calcium-binding, RGD-containing, phosphorylated glycoprotein originally isolated from bone matrix (1). Subsequently, OPN has been found in kidney, placenta, blood vessels and various tumor tissues. Many cell types (including macrophages, osteoclasts, activated T cells, fibroblasts, epithelial cells, vascular smooth muscle cells, and natural killer cells) can express OPN in response to activation by cytokines, growth factors or inflammatory mediators. Elevated expression of OPN has also been associated with numerous pathobiological conditions such as atherosclerotic plaques, renal tubulointerstitial fibrosis, granuloma formations in tuberculosis and silicosis, neointimal formation associated with balloon catheterization, metastasizing tumors, and cerebral ischemia. Human OPN cDNA encodes a 314 amino acid (aa) residue precursor protein with a 16 aa residue predicted signal peptide that is cleaved to yield a 298 aa residue mature protein with an integrin binding sequence (RGD), and N- and O-glycosylation sites. By alternative splicing, at least three human OPN isoforms exist. OPN has been shown to bind to different cell types through RGD-mediated interaction with the integrins  $\alpha_v\beta_1$ ,  $\alpha_v\beta_3$ ,  $\alpha_v\beta_5$ , and non-RGD-mediated interaction with CD44 and the integrins  $\alpha_8\beta_1$  or  $\alpha_9\beta_1$ . OPN exists both as a component of extracellular matrix and as a soluble molecule. Functionally, OPN is chemotactic for macrophages, smooth muscle cells, endothelial cells and glial cells. OPN has also been shown to inhibit nitric oxide production and cytotoxicity by activated macrophages. Human, mouse, rat, pig, and bovine OPN share from approximately 40-80% amino acid sequence identity. Osteopontin is a substrate for proteolytic cleavage by thrombin, enterokinase, MMP-3, and MMP-7. The functions of OPN in a variety of cell types were shown to be modified as a result of proteolytic cleavage (2, 3).

## References:

1. Ann. N.Y. Acad. Sci. (1995) **760**, Apr. 21.
2. Senger, D.R. *et al.* (1996) Biochim. Biophys. Acta. **1314**:13.
3. Agnihotri, R. *et al.* (2001) J. Biol. Chem. **276**:28261.