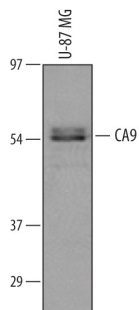


DESCRIPTION	
<b>Species Reactivity</b>	Human
<b>Specificity</b>	Detects human Carbonic Anhydrase IX (CA9) in direct ELISAs and Western blots. In direct ELISAs, approximately 10% cross-reactivity with recombinant mouse CA9 is observed and less than 1% cross-reactivity with recombinant human CA1, 3, 4, 8, 10, 12, and 14 is observed.
<b>Source</b>	Polyclonal Goat IgG
<b>Purification</b>	Antigen Affinity-purified
<b>Immunogen</b>	Mouse myeloma cell line NS0-derived recombinant human Carbonic Anhydrase IX Pro59-Asp414 Accession # Q16790
<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		
<b>Please Note:</b> Optimal dilutions should be determined by each laboratory for each application. <i>General Protocols</i> are available in the <i>Technical Information</i> section on our website.		
	Recommended Concentration	Sample
<b>Western Blot</b>	1 µg/mL	See Below
<b>Flow Cytometry</b>	0.25 µg/10 <sup>6</sup> cells	HeLa human cervical epithelial carcinoma cell line
<b>Immunocytochemistry</b>	3-15 µg/mL	See Below
<b>Immunohistochemistry</b>	5-15 µg/mL	See Below
<b>Immunoprecipitation</b>	25 µg/mL	Conditioned cell culture medium spiked with Recombinant Human Carbonic Anhydrase IX (Catalog # 2188-CA), see our available <a href="#">Western blot detection antibodies</a>
<b>CyTOF-reported</b>	Chevrier, S. <i>et al.</i> (2018) Cell Systems. <b>6</b> : 612. Ready to be labeled using established conjugation methods. No BSA or other carrier proteins that could interfere with conjugation.	

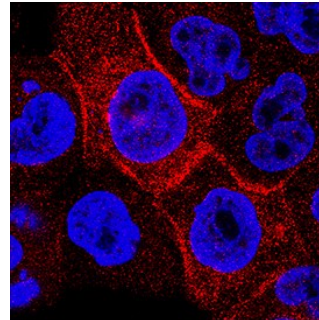
## DATA

### Western Blot



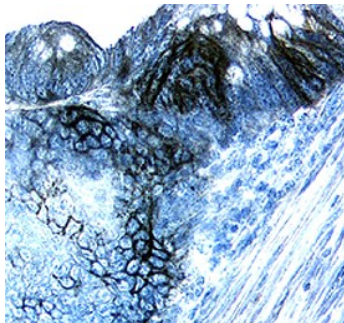
**Detection of Human Carbonic Anhydrase IX/CA9 by Western Blot.** Western blot shows lysates of U-87 MG human glioblastoma/astrocytoma cell line. PVDF membrane was probed with 1 µg/mL of Goat Anti-Human Carbonic Anhydrase IX/CA9 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF2188) followed by HRP-conjugated Anti-Goat IgG Secondary Antibody (Catalog # HAF109). A specific band was detected for Carbonic Anhydrase IX/CA9 at approximately 58 kDa (as indicated). This experiment was conducted under reducing conditions and using [Immunoblot Buffer Group 8](#).

### Immunocytochemistry



**Carbonic Anhydrase IX/CA9 in A431 Human Cell Line.** Carbonic Anhydrase IX/CA9 was detected in immersion fixed A431 human epithelial carcinoma cell line using Goat Anti-Human Carbonic Anhydrase IX/CA9 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF2188) at 3 µg/mL for 3 hours at room temperature. Cells were stained using the NorthernLights™ 557-conjugated Anti-Goat IgG Secondary Antibody (red; Catalog # NL001) and counterstained with DAPI (blue). Specific staining was localized to cytoplasm. View our protocol for [Fluorescent ICC Staining of Cells on Coverslips](#).

### Immunohistochemistry



**Carbonic Anhydrase IX/CA9 in Human Colon Cancer Tissue.** Carbonic Anhydrase IX/CA9 was detected in immersion fixed paraffin-embedded sections of human colon cancer tissue using Goat Anti-Human Carbonic Anhydrase IX/CA9 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF2188) 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). Specific labeling was localized to the plasma membrane of epithelial cells. View our protocol for [Chromogenic IHC Staining of Paraffin-embedded Tissue Sections](#).

## 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

Carbonic Anhydrase (CA) catalyzes the reversible reaction of  $\text{CO}_2 + \text{H}_2\text{O} = \text{HCO}_3^- + \text{H}^+$ , which is fundamental to many processes such as respiration, renal tubular acidification and bone resorption (1-3). Topics in the CA meeting (6<sup>th</sup> International Conference on the CAs, June 20-25, 2003, in Slovakia) ranged from use of CAs as markers for tumor and hypoxia in clinic, as nutritional supplement in milk, and as a tool for  $\text{CO}_2$  removal and mosquito control in industry. CA9, also known as membrane antigen MN and renal cell carcinoma (RCC)-associated antigen G250, is a transmembrane enzyme expressed primarily in carcinoma cells. It is one of the best markers for hypoxia and for RCC (4, 5). Recombinant human CA9 corresponds to the extracellular portion of human CA9.

## References:

1. Pastorek, J. *et al.* (1994) *Oncogene* **9**: 2877.
2. Opavsky, R. *et al.* (1996) *Genomics* **33**: 480.
3. Hewett-Emmett, D. and R.E. Tashian (1996) *Mol. Phylogenet. Evol.* **5**:50.
4. Kaluzova, M. *et al.* (2004) *Mol. Cell Biol.* **24**:5757.
5. Mukoyama, H. *et al.* (2004) *Clin. Cancer Res.* **10**:1421.