

## Recombinant Human CA2, C13&N15-labeled

**Cat. No.** CA2-220H    **Lot. No.** (See product label)

### SPECIFICATION

**Product Overview**      Recombinant Human CAII /CA2 MS Standard Protein, C13 and N15-labeled (CAII / CA2, Heavy Labeled) Met 1 - Lys 260 (Accession # NP\_000058.1) was produced in human 293 cells (HEK293).

**Species**                      Human

**Source**                        HEK293

**ProteinLength**              1-260 a.a.

**Description**                      Carbonic anhydrases (CAs) are a large family of zinc metalloenzymes. CAs form a family of enzymes that catalyze the rapid interconversion of carbon dioxide and water to bicarbonate and protons (or vice versa), a reversible reaction that occurs rather slowly in the absence of a catalyst. One of the functions of the enzyme in animals is to interconvert carbon dioxide and bicarbonate to maintain acid-base balance in blood and other tissues, and to help transport carbon dioxide out of tissues. The active site of most carbonic anhydrases contains a zinc ion. They are, therefore, classified as metalloenzymes. There are at least five distinct CA families ( $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  and  $\epsilon$ ). These families have no significant amino acid sequence similarity and in most cases are thought to be an example of convergent evolution. The  $\alpha$ -CAs are found in humans.[1] Carbonic anhydrase II (CA2) also known as Carbonate dehydratase II, Carbonic anhydrase C, is one of fourteen forms of human  $\alpha$  carbonic anhydrases. Defects in this enzyme are associated with osteopetrosis and renal tubular acidosis. Renal carbonic anhydrase allows the reabsorption of sodium ions in the proximal

 Tel: 1-631-559-9269    1-516-512-3133

 Email: [info@creative-biomart.com](mailto:info@creative-biomart.com)     Fax: 1-631-938-8127

 45-1 Ramsey Road, Shirley, NY 11967, USA

	tubule. Carbonic anhydrase II has been shown to interact with Band 3 and Sodium-hydrogen antiporter 1.[2-5]
<b>Form</b>	Lyophilized from 0.22 µm filtered solution in 20 mM Tris, pH 8.0, with 150 mM NaCl, 1 mM DTT.. Normally Mannitol or Trehalose are added as protectants before lyophilization.
<b>Molecular Mass</b>	CAII / CA2, Heavy Labeled, fused with 6xHis tag at the C-terminus, has a calculated MW of 30 kDa. The predicted N-terminus is Met 1 . DTT-reduced Protein migrates as 30 kDa.
<b>Endotoxin</b>	Less than 1.0 EU per µg of the CAII / CA2, Heavy Labeled by the LAL method.
<b>Purity</b>	>95% as determined by SDS-PAGE.
<b>Storage</b>	Avoid repeated freeze-thaw cycles.No activity loss was observed after storage at:In lyophilized state for 1 year (4oC-8oC); After reconstitution under sterile conditions for 1 month (4oC-8oC) or 3 months (-20oC to -70oC).

## GENE INFORMATION

<b>Gene Name</b>	CA2 carbonic anhydrase II [ Homo sapiens ]
<b>Official Symbol</b>	CA2
<b>Synonyms</b>	CA2; carbonic anhydrase II; carbonic anhydrase 2; CA II; CAII; Car2; CAC; carbonic anhydrase B; carbonic anhydrase C; carbonic dehydratase; carbonate dehydratase II; CA-II;
<b>Gene ID</b>	760

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<b>mRNA Refseq</b>	NM_000067
<b>Protein Refseq</b>	NP_000058
<b>MIM</b>	611492
<b>UniProt ID</b>	P00918
<b>Chromosome Location</b>	8q22
<b>Pathway</b>	Bile secretion, organism-specific biosystem; Bile secretion, conserved biosystem; Collecting duct acid secretion, organism-specific biosystem; Collecting duct acid secretion, conserved biosystem; Gastric acid secretion, organism-specific biosystem; Gastric acid secretion, conserved biosystem; Pancreatic secretion, organism-specific biosystem;
<b>Function</b>	carbonate dehydratase activity; lyase activity; metal ion binding; zinc ion binding;

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