

## Monoclonal Anti-AKR1C3 (Aldo-Keto Reductase 1C3)

**Prod. Code:** A 6229

**Clone Name:** NP6.G6.A6, developed in mouse

**Product Form:** Purified mouse immunoglobulin

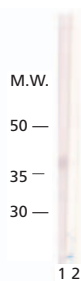
**Immunogen:** human AKR1C3 protein [1]

**Isotype:** IgG1

**Species Cross Reactivity:** human

Aldo-keto reductases (AKRs) are enzymes that perform oxidation on natural and foreign substrates and play a central role in the metabolism of natural products, drugs, xenobiotics and carcinogens. The AKR1 (aldo-keto reductases 1) family is the largest among the 14 AKR families and includes the aldose reductases, aldehyde reductases, hydroxysteroid dehydrogenases, and steroid 5  $\beta$ -reductases [2]. In humans, the four isoforms AKR1C1-4 catalyze the reduction of the androgen 5 $\alpha$ -dihydrotestosterone (DHT) into inactive 3 $\beta$  or 3 $\alpha$  androstenediol (3 $\alpha$  $\beta$ -diol). *In vitro*, these enzymes also display 3 $\alpha$ [17 $\beta$ ]-hydroxysteroid oxidase activity using 3 $\alpha$ -diol as a substrate [3]. AKR1Cs are expressed in many tissues and their expression is dramatically increased in non-small cell lung carcinoma [4]. Due to their product profile and discrete tissue localization, AKR1Cs may regulate the level of active androgens, estrogens and progestins in target tissues [5].

**Applications:** Immunoblotting (~38 kDa), ELISA and immunohistochemistry



### Immunoblot:

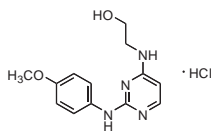
Total cell extract from A549 cells were separated by SDS-PAGE and probed with Monoclonal Anti-AKR1C3, Clone NP6.G6.A6 (Prod. Code **A 6229**) (Lane 1) or without primary antibody (Lane 2) and further incubated with goat anti-mouse IgG, alkaline phosphatase conjugate (Prod. Code **A 2179**).

### References

- Lin, H.K., et al., Characterization of a monoclonal antibody for human aldo-keto reductase AKR1C3 (type 2 3 $\alpha$ -hydroxysteroid dehydrogenase/type 5 17 $\beta$ -hydroxysteroid dehydrogenase); immunohistochemical detection in breast and prostate. *Steroids*, **69**, 795-801 (2004).
- Hyndman, D., et al., The aldo-keto reductase superfamily homepage. *Chem. Biol. Interact.*, **143-144**, 621-631 (2003).
- Steckelbroeck, S., et al., Human cytosolic 3 $\alpha$ -hydroxysteroid dehydrogenases of the aldo-keto reductase superfamily display significant 3 $\beta$ -hydroxysteroid dehydrogenase activity: implications for steroid hormone metabolism and action. *J. Biol. Chem.*, **279**, 10784-10795 (2004).
- Palackal, N.T., et al., Activation of polycyclic aromatic hydrocarbon trans-dihydrodiol proximate carcinogens by human aldo-keto reductase (AKR1C) enzymes and their functional overexpression in human lung carcinoma (A549) cells. *J. Biol. Chem.*, **277**, 24799-24808 (2002).
- Penning, T.M., et al., Human 3 $\alpha$ -hydroxysteroid dehydrogenase isoforms (AKR1C1-AKR1C4) of the aldo-keto reductase superfamily: functional plasticity and tissue distribution reveals roles in the inactivation and formation of male and female sex hormones. *Biochem. J.*, **351**, 67-77 (2000).

## Cardiogenol C hydrochloride: Cardiomyogenesis inducer

**Prod. Code** C 4866



Potent, cell permeable inducer of ESC (embryonic stem cell) differentiation in cardiomyocytes displaying an EC<sub>50</sub> of 100 nM.

### References

- Wu, X., et al., Small molecules that induce cardiomyogenesis in embryonic stem cells. *J. Am. Chem. Soc.*, **126**, 1590-1591 (2004).

## Monoclonal Anti- $\beta$ -Amyloid [13-28]

**Prod. Code:** A 8978

**Clone Name:** BAM90.1, developed in mouse

**Product Form:** Purified mouse immunoglobulin

**Immunogen:** synthetic peptide corresponding to amino acids 13-28 of human  $\beta$ -amyloid

**Isotype:** IgG1

**Species Cross Reactivity:** human

The antibody epitope resides within amino acids 20-23.

The  $\beta$ -amyloid precursor protein (APP) is cleaved sequentially by the proteolytic enzymes  $\beta$ -secretase and  $\gamma$ -secretase to produce  $\beta$ -amyloid (A $\beta$ ) peptides with the A $\beta$ 1-42 and the A $\beta$ 1-40 forms being the most prevalent. Extracellular accumulation of A $\beta$  leads to formation of aggregates, fibrils and eventually amyloid deposits called neuritic plaques, a hallmark of Alzheimer's disease (AD) [1]. Of the many proposed mechanisms of AD protein toxicity, one may be through calcium-mediated neurotoxicity. A $\beta$  peptides can increase calcium influx through voltage-gated N- and L-type calcium channels, reduce the magnesium blockage of NMDA receptors to allow increased calcium influx, and can form a cation-selective ion channel after their incorporation into the cell membrane [2-3]. Thus, A $\beta$  peptides may elicit toxic effects prior to fibril formation. A $\beta$  peptides also have been found to exhibit superoxidase dismutase activity, thus producing hydrogen peroxidase that may be responsible for neurotoxicity [4].

**Applications:** ELISA, immunoblotting, immunoprecipitation, immunohistochemistry and *in vivo* sequestration of endogenous plasma human  $\beta$ -Amyloid peptide (1-40).

### References

- Law, A., et al., Say NO to Alzheimer's disease: the putative links between nitric oxide and dementia of the Alzheimer's type. *Brain Res. Rev.*, **35**, 73-96 (2001).
- Pearson, H.A., in Alzheimer's Disease: Methods and Protocols, Hooper, N.M. (Ed.) pp. 113-138, Humana Press, NJ (2000).
- Zhu, Y.J., et al., Fresh and nonfibrillar amyloid beta protein (1-40) induces rapid cellular degeneration in aged human fibroblasts: evidence for AbetaP-channel-mediated cellular toxicity. *FASEB J.*, **14**, 1244-1254 (2000).
- Veurink, G., et al., Genetics, lifestyle and the roles of amyloid beta and oxidative stress in Alzheimer's disease. *Ann. Hum. Biol.*, **30**, 639-667 (2003).

### Related Products

Product Name	Host	Clone	Prod. Code
Monoclonal Anti- $\beta$ -Amyloid [1-17]	Mouse	6E10	<a href="#">A 1474</a>
Monoclonal Anti- $\beta$ -Amyloid [17-24]	Mouse	4G8	<a href="#">A 1349</a>
Monoclonal Anti- $\beta$ -Amyloid Protein	Mouse	BAM-10	<a href="#">A 5213</a>
Anti-Amyloid Peptide $\beta$ , Cleavage Site 42	Rabbit		<a href="#">A 1976</a>
Anti-Amyloid Peptide $\beta$ , Cleavage Site 43	Rabbit		<a href="#">A 2101</a>
Anti- $\beta$ -Amyloid Protein (1-40)	Rabbit		<a href="#">A 8326</a>

## BIM 23056: Selective sst5 somatostatin receptor antagonist

**Prod. Code** B 4310

D-Phe-Phe-Tyr-D-Trp-Lys-Val-Phe-D-Nal-NH<sub>2</sub>

Antagonizes somatostatin-induced intracellular calcium increase in CHO cells expressing human sst5 somatostatin receptors (pK<sub>B</sub> ~8; K<sub>i</sub> = 5.7 nM).

### References

- Nunn, C., et al., Pharmacological characterization of the goldfish somatostatin sst5 receptor. *Eur. J. Pharmacol.*, **436**, 173-186 (2002).
- Wilkinson, G.F., et al., Potent antagonism by BIM-23056 at the human recombinant somatostatin sst5 receptor. *Br. J. Pharmacol.*, **118**, 445-447 (1996).
- Raynor, K., et al., Cloned somatostatin receptors: identification of subtype-selective peptides and demonstration of high affinity binding of linear peptides. *Mol. Pharmacol.*, **43**, 838-844 (1993).