



## Product Information

### **Monoclonal Anti-Human $\beta$ Amyloid Protein [17-24]** Clone 4G8 Purified Mouse Immunoglobulin

Product Number **A 1349**

#### **Product Description**

Monoclonal Anti-Human  $\beta$  Amyloid Protein [17-24] (mouse IgG2b isotype) is derived from the hybridoma produced by the fusion of mouse myeloma cells and splenocytes from a BALB/c mouse immunized with a synthetic peptide corresponding to amino acids 17-24 of the  $\beta$  amyloid peptide<sup>1</sup> with Glu substituted at position 11, conjugated to KLH. The immunoglobulin is isolated from mouse ascites fluid by Protein A chromatography.

Monoclonal Anti-Human  $\beta$  Amyloid Protein [17-24] recognizes amino acid residues 17-24 of the human  $\beta$  amyloid peptide by immunoblotting, ELISA, immunoaffinity purification, immunoprecipitation and immunohistochemistry on fixed sections. This antibody may react with mouse  $\beta$  amyloid protein at higher IgG and/or antigen concentrations. Monoclonal Anti-Human  $\beta$  Amyloid Protein [17-24] also recognizes the precursor forms and the abnormally processed isoforms.

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. Secreted  $A\beta$  peptides can bind to scavenger receptors and the receptor for advanced glycation end-products.  $A\beta$  peptides are degraded either via a reuptake mechanism followed by endosomal degradation or by an extracellular insulin-degrading enzyme. 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).<sup>1</sup>

Much AD research has been focused on determining the underlying mechanism(s) of  $A\beta$  protein toxicity. One possible mechanism of  $A\beta$  protein toxicity is through calcium-mediated neurotoxicity.  $A\beta$  peptides can

increase calcium influx through voltage-gated calcium channels (N- and L-type), reduce the magnesium blockade of NMDA receptors to allow increased calcium influx and, lastly, they can form a cation-selective ion channel after their incorporation into the cell membrane.<sup>2-4</sup> Cation channels are induced by both nascent and globular  $A\beta$  peptides.<sup>5</sup> Thus,  $A\beta$  peptides may elicit toxic effects prior to fibril formation. Recent evidence suggests that copper and zinc may modulate the structure of the pleomorphic  $A\beta$  peptides to induce either pore formation or peptide precipitation.<sup>6</sup>

#### **Reagent**

Monoclonal Anti-Human  $\beta$  Amyloid Protein [17-24] is supplied as 100  $\mu$ l purified immunoglobulin at 1 mg/ml in phosphate buffered saline. The solution is sterile filtered.

#### **Storage/Stability**

Store at  $-20^{\circ}\text{C}$ . For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

#### **Product Profile**

The recommended working dilutions are 1:10<sup>3</sup> to 1:10<sup>5</sup> for ELISA; 1:100 to 1:1000 for immunoblotting; 1:10 to 1:100 for immunoprecipitation, and 1:100 to 1:1000 for immunohistochemistry.

Immunohistochemistry has been performed on formalin-fixed human and animal brains or paraffin-embedded and Immunogold EM embedded Alzheimer or animal brain sections. The epitope must be re-exposed in fixed tissues by pretreatment of tissue with 70 % formic acid for 10-30 minutes at room temperature.

Note: In order to obtain the best results and assay sensitivities of various techniques and preparations, we recommend determining optimal working dilutions by titration.

#### References

1. Law, A., et al., *Brain Res. Rev.*, **35**, 73-96 (2001).
2. Pearson, H.A., in *Alzheimer's Disease: Methods and Protocols*, Hooper, N.M. (Ed.) pp. 113-138 (Humana Press, NJ, 2000).
3. Kawahara, M. and Kuroda, Y., *Brain Res. Bulletin*, **53**, 389-397 (2000).
4. Zhu, Y.J., et al., *FASEB*, **14**, 1244-1254 (2000).
5. Bhatia, R., et al., *FASEB*, **14**, 1233-1243 (2000).
6. Curtain, C.C., et al., *J. Biol. Chem.*, **276**, 20466-20473 (2001).

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