



# Toxic Conformer of Amyloid $\beta$ Specific Antibody (Clone: 11A1)

- Research Use Only -

| Product No. | Product Name  | Application | Specificity   | Volume     | Sample Volume |
|-------------|---|-------------|---|------------|---------------|
| 10379       | Anti-Human Amyloid $\beta$ E22P (11A1) Mouse IgG MoAb | IHC, WB, IP | Reacts with native human Amyloid $\beta$ 1-40, 1-42 | 50 $\mu$ G | 5 $\mu$ G     |

Alzheimer's disease (AD) is characterized by the presence of extracellular plaques and intracellular neurofibrillary tangles (NFTs) in the brain. Aggregation of the 42-mer amyloid  $\beta$ -protein (A $\beta$ 42) plays a critical role in the pathogenesis of AD. Shirasawa and Irie et. al have proposed a toxic conformer with a turn at positions 22 and 23, as well as a nontoxic conformer with a turn at positions 25 and 26, in A $\beta$ 42 aggregates from systematic proline scanning and solid-state NMR studies. This monoclonal antibody named 11A1 was developed for toxic A $\beta$ 42, using E22P-A $\beta$ 10-35, a minimum moiety for neurotoxicity containing the turn at positions 22 and 23, for the generation. Immunohistochemical studies showed that not only extracellular but intracellular amyloid was stained in human AD brains, which suggest that 11A1 could detect toxic oligomers of A $\beta$  with the turn at positions 22 and 23.

### IHC by Clone 11A1

Human AD brain

Physiological conformer      Toxic conformer      Conformationally restricted A $\beta$

### Toxic and non-Toxic conformer of A $\beta$

- This antibody can detect not only senile plaque (blue arrow in figure) but also intracellular A $\beta$  (red arrow in figure) (Ref.4)
- This antibody can detect A $\beta$  oligomer in AD brain extract.

#### References

1. Morimoto A, Irie K, Murakami K, Masuda Y, Ohigashi H, Nagao M, Fukuda H, Shimizu T, Shirasawa T. Analysis of the secondary structure of beta-amyloid (Abeta42) fibrils by systematic proline replacement. *J Biol Chem.* 2004 Dec 10;279(50):52781-8.
2. Murakami K, Irie K, Ohigashi H, Hara H, Nagao M, Shimizu T, Shirasawa T. Formation and stabilization model of the 42-mer Abeta radical: implications for the long-lasting oxidative stress in Alzheimer's disease. *J Am Chem Soc.* 2005 Nov 2;127(43):15168-74.
3. Masuda Y, Uemura S, Ohashi R, Nakanishi A, Takegoshi K, Shimizu T, Shirasawa T, Irie K. Identification of physiological and toxic conformations in Abeta42 aggregates. *Chembiochem.* 2009 Jan 26;10(2):287-95.
4. Murakami K, Horikoshi-Sakuraba Y, Murata N, Noda Y, Masuda Y, Kinoshita N, Hatsuta H, Murayama S, Shirasawa T, Shimizu T, Irie K. Monoclonal Antibody Against the Turn of the 42-Residue Amyloid  $\beta$ -Protein at Positions 22 and 23. *ACS Chem. Neurosci.* 2010 Sept 28;1(11):747-56.

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