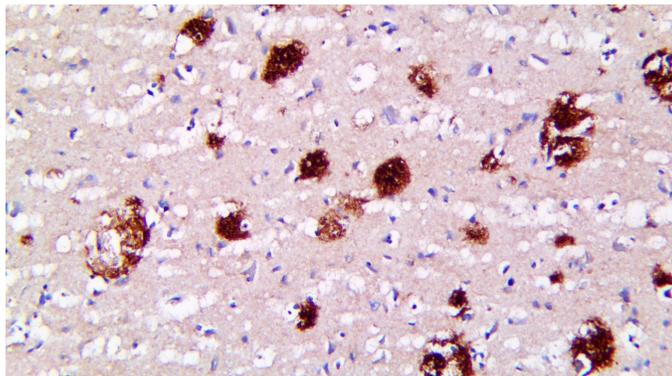


# APOE4

Clone: BSB-170  
Mouse Monoclonal



*Inset: IHC of APOE4 on a FFPE Patient's Brain tissue with Alzheimer's disease*

## Intended Use

For In Vitro Diagnostic Use.

This antibody is intended for use in Immunohistochemical applications on formalin-fixed paraffin-embedded tissues (FFPE), frozen tissue sections, and cell preparations. Interpretation of results should be performed by a qualified medical professional.

## Immunogen

Recombinant Human Apolipoprotein E3.

## Summary and Explanation

Apolipoprotein E4 (APOE4) is a protein known to contribute to the onset of Alzheimer's disease. While it is expressed in many organs, in the brain APOE4 has been associated with deposition of insoluble amyloid plaques A $\beta$ 40 and A $\beta$ 42 in the interstitial fluid in the cortex and hippocampus. APOE isoforms are produced by astrocyte cells, and assist in the delivery of lipids such as cholesterol to the neurons. LDL receptor-related protein 1 (LRP1) metabolizes APOE and A $\beta$  plaques; in knockout mice models, the presence of APOE4 (more than other isoforms) was shown to increase the deposition of insoluble A $\beta$ 40 and A $\beta$ 42 in the presence of LRP1. APOE4 has been found to be a genetic factor in the pathology of Alzheimer's disease, Lewy Body Dementia, and Parkinson's Disease. The mechanisms of overproduction of plaques and interference in clearing the amyloid peptides result in the accumulation of A $\beta$ 42. The A $\beta$  plaque burden in the brains of Alzheimer's patients with APOE4 isoform is around 2.7 times that of patients with APOE3 isoform, indicating a role of APOE4 in A $\beta$  metabolism. The accumulated A $\beta$  oligomers have been shown to disrupt synaptic function- the loss of dendritic spines contributes to the loss of cognitive function. APOE4 has also been shown to predict better prognosis than APOE2 isotype in melanoma patients, but overall APOE serum levels predict immunosuppression and worse patient survival in Pancreatic Ductal Cell Carcinoma.

<b>Antibody Type</b>	Mouse Monoclonal	<b>Clone</b>	BSB-170
<b>Isotype</b>	IgG2a	<b>Reactivity</b>	Paraffin, Frozen
<b>Localization</b>	Cytoplasmic, Membranous	<b>Species Reactivity</b>	Human
<b>Control</b>	Adrenal Gland, Placenta, Kidney, Ovarian Serous Carcinoma, Diffuse Large BCell Lymphoma		
<b>Application</b>	Alzheimer's Disease		

## Presentation

Anti-APOE4 is a mouse monoclonal antibody derived from cell culture supernatant that is concentrated, dialyzed, filter sterilized and diluted in buffer pH 7.5, containing BSA and sodium azide as a preservative.

<i>Catalog No.</i>	<i>Presentation</i>	<i>Dilution</i>	<i>Volume</i>
BSB-3798-3	Predilute	Ready-to-Use	3.0 mL
BSB-3798-7	Predilute	Ready-to-Use	7.0 mL
BSB-3798-15	Predilute	Ready-to-Use	15.0 mL
BSB-3798-01	Concentrate	1:50-1:200	0.1 mL
BSB-3798-05	Concentrate	1:50-1:200	0.5 mL
BSB-3798-1	Concentrate	1:50-1:200	1.0 mL

## Control Slides Available

<i>Catalog No.</i>	<i>Quantity</i>
BSB-9436-CS	5 slides

**Storage** Store at 2-8°C (Control Slides: Store at 20-25°C)

## Precautions

1. For professional users only. Results should be interpreted by a qualified medical professional.
2. This product contains <0.1% sodium azide (NaN<sub>3</sub>) as a preservative. Ensure proper handling procedures are used with this reagent.
3. Always wear personal protective equipment such as a laboratory coat, goggles, and gloves when handling reagents.
4. Dispose of unused solution with copious amounts of water.
5. Do not ingest reagent. If reagent is ingested, seek medical advice immediately.
6. Avoid contact with eyes. If contact occurs, flush with large quantities of water.
7. Follow safety precautions of the heating device used for epitope retrieval (TintoRetriever Pressure Cooker or similar).
8. For additional safety information refer to the Safety Data Sheet for this product.
9. For complete recommendations for handling biological specimens, please refer to the CDC document, "Guidelines for Safe Work Practices in Human and Animal Medical Diagnostic Laboratories" (see References in this document).

## Stability

**This product is stable up to the expiration date on the product label.**

Do not use after expiration date listed on the package label. Temperature fluctuations should be avoided. Store appropriately when not in use and avoid prolonged exposure to room temperature conditions.

## Specimen Preparation

**Paraffin sections:** The antibody can be used on formalin-fixed paraffin-embedded (FFPE) tissue sections. Ensure tissue undergoes appropriate fixation for best results. Pre-treatment of tissues with heat-induced epitope retrieval (HIER) is recommended using Bio SB ImmunoDNA Retriever with Citrate (BSB 0020-BSB 0023), ImmunoDNA Retriever with EDTA (BSB 0030-BSB 0033), or ImmunoDNA Digestor (BSB 0108-0112). See reverse side for complete protocol. Tissue should remain hydrated via use of Bio SB Immuno/DNA Washer solutions (BSB 0029 & BSB 0042).

**Frozen sections and cell preparations:** The antibody can be used on acetone-fixed frozen sections and acetone-fixed cell preparations.

## IHC Protocol

1. Cut and mount 3-5 micron formalin-fixed paraffin-embedded tissues on positively charged slides such as Bio SB Hydrophilic Plus Slides (BSB 7028).
2. Air dry for 2 hours at 58° C.
3. Deparaffinize, dehydrate, and rehydrate tissues.
4. Subject tissues to heat induced epitope retrieval (HIER) using a suitable retrieval solution such as ImmunoDNA Retriever with Citrate (BSB 0020-BSB 0023) or EDTA (BSB 0030-BSB 0033).
5. Any of three heating methods may be used:

### a. TintoRetriever Pressure Cooker or Equivalent

Place tissues/slides in a staining dish or coplin jar containing the ImmunoDNA Retriever with Citrate or EDTA and place on the trivet in the pressure cooker. Add 1-2 inches of distilled water to the pressure cooker and turn heat to high. Incubate for 15 minutes. Open and immediately transfer slides to room temperature.

### b. TintoRetriever PT Module or Water Bath Method

Place tissues/slides in a pre-warmed staining dish or coplin jar containing the ImmunoDNA Retriever with Citrate or EDTA at 95°-99° C. Incubate for 30-60 minutes.

### c. Conventional Steamer Method

Place tissues/slides in a pre-warmed staining dish or coplin jar containing the ImmunoDNA Retriever with Citrate or EDTA in a steamer, cover and steam for 30-60 minutes.

6. After heat treatment, transfer slides in ImmunoDNA Retriever with Citrate or EDTA to room temperature and let stand for 15-20 minutes.
7. For manual IHC, perform antibody incubation at ambient temperature. For automated IHC methods, perform antibody incubation according to instrument manufacturer's instructions.
8. Wash slides with ImmunoDNA washer or DI water.
9. Continue IHC protocol. Wash slides between each step with ImmunoDNA washer solution.

## Abbreviated Immunohistochemical Protocol

Step	ImmunoDetector AP/HRP	PolyDetector AP/HRP	PolyDetector Plus HRP
Peroxidase/AP Blocker	5 min.	5 min.	5 min
Primary Antibody	30-60 min.	30-60 min.	30-60 min.
1st Step Detection	10 min.	30-45 min.	15 min.
2nd Step Detection	10 min.	Not Applicable	15 min.
Substrate- Chromogen	5-10 min.	5-10 min.	5-10 min.
Counterstain/Coverslip	Varies	Varies	Varies

## Mounting Protocols

For detailed instructions using biodegradable permanent mounting media such as XyGreen PermaMounter (BSB 0169-0174) or organic solvent based resin such as PermaMounter (BSB 0094-0097), refer to PI0174 or PI0097.

## Product Limitations

Due to inherent variability present in immunohistochemical procedures (including fixation time of tissues, dilution factor of antibody, retrieval method utilized, and incubation time), optimal performance should be established through the use of positive and negative controls. Results should be interpreted by a qualified medical professional.

## References

1. Zhao N, et al. APOE4 exacerbates  $\alpha$ -synuclein pathology and related toxicity independent of amyloid. *Sci Transl Med.* 2020;12(529):1809
2. Tachibana M, et al. APOE4-mediated amyloid- $\beta$  pathology depends on its neuronal receptor LRP1. *J Clin Invest.* 2019;129(3):1272-1277
3. Koren-Iton A, et al. Central and Peripheral Mechanisms in ApoE4-Driven Diabetic Pathology. *Int J Mol Sci.* 2020;21(4):1289.
4. Hashimoto T, et al. Apolipoprotein E, especially apolipoprotein E4, increases the oligomerization of amyloid  $\beta$  peptide. *J Neurosci.* 2012;32(43):15181-92.
5. Castellano J, et al. Human apoE isoforms differentially regulate brain amyloid- $\beta$  peptide clearance. *Sci Transl Med.* 2011;3(89):89ra57.
6. Martin L, et al. VEGF counteracts amyloid-b-induced synaptic dysfunction. *Cell Reports.* 2021;35: 109121.
7. Bittner T, et al. Multiple Events Lead to Dendritic Spine Loss in Triple Transgenic Alzheimer's Disease Mice. *PLoS ONE.* 2010;5(11): e15477.

## Symbol Key/Légende des symboles/Erläuterung der Symbole

	EMERGO EUROPE Prinsessegracht 20 2514 AP The Hague The Netherlands	 Storage Temperature Limites de température Zulässiger Temperaturbereich	 Manufacturer Fabricant Hersteller	 Catalog Number Référence du catalogue Bestellnummer
	In Vitro Diagnostic Medical Device Dispositif médical de diagnostic in vitro In-Vitro-Diagnostikum	 Read Instructions for Use Consulter les instructions d'utilisation Gebrauchsanweisung beachten	 Expiration Date Utiliser jusque Verwendbar bis	 Lot Number Code du lot Chargenbezeichnung