SYSY Antibodies

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Abeta-pE3

Cat.No. 218 003; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin and azide were added for stabilization. For **reconstitution** add 50 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°C until use. Antibodies should be stored at +4°C when still lyophilized. Do not freeze! For detailed information, see back of the data sheet.
Applications	**WB**: 1 : 1000 (ECL detection) (see remarks) **IP**: not tested yet **ICC**: not tested yet **IHC**: 1 : 500 (see remarks) **IHC-P (FFPE)**: 1 : 200 (see remarks)
Immunogen	Synthetic peptide corresponding to the amino terminal part of human Abeta-pE3 (UniProt Id: P05067)
Reactivity	Reacts with: human (P05067), rat (P08592), mouse (P12023). Other species not tested yet.
Specificity	Specific for Abeta-pE3.
Remarks	**WB**: Due to the small size of this protein/peptide, we recommend a 16% Schaegger gel system. Detects purified Abeta pE3. Complex samples like brain extracts still have to be tested. Boil membrane in PBS after blotting for 3min. **IHC**: Antigen retrieval with formic acid is required. **IHC-P (FFPE)**: Antigen retrieval with citrate buffer pH 6, followed by formic acid treatment, is required for chromogenic detection. For chromogenic detection, an optimized AGR time of 20 minutes is recommended for best results.

TO BE USED IN VITRO / FOR RESEARCH ONLY
NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

Background

Amyloid deposits, also called plaques, of Alzheimer's patients consist of several protein components like the **a**myloid **beta**-peptides (**Abeta**, **Aβ**) 1-40/42 and additional C- and N-terminally truncated and modified fragments. Very abundant are the isoaspartate (isoAsp)-Abeta and **p**yro**glu**tamyl (**pGlu**)-Abeta peptides. The latter are formed by cyclization of the N-terminal glutamate at position 3 or 11 catalyzed by glutaminyl cyclase (QC) resulting in very amyloidogenic and neurotoxic variants of Abeta; **Abeta-pE3** and Abeta pE11.
In contrast to extracellular plaques that do not perfectly correlate with Alzheimer´s disease intraneuronal Abeta accumulation and vascular Abeta deposits have gained more and more evidence to be among the crucial factors responsible for progressive neuron loss.

Selected References for 218 003

Prion-like behaviour and tau-dependent cytotoxicity of pyroglutamylated amyloid-β.
Nussbaum JM, Schilling S, Cynis H, Silva A, Swanson E, Wangsanut T, Tayler K, Wiltgen B, Hatami A, Rönicke R, Reymann K, et al.
Nature (2012) 4857400: 651-5. . **IHC, WB**

A Screen of Plant-Based Natural Products Revealed That Quercetin Prevents Pyroglutamylated Amyloid-β (Aβ3(pE)-42) Uptake in Astrocytes As Well As Resulting Astrogliosis and Synaptic Dysfunction.
Arndt H, Bachurski M, Yuanxiang P, Franke K, Wessjohann LA, Kreutz MR, Grochowska KM
Molecular neurobiology (2024) : . . **WB, ICC; tested species: rat**

Novel Vaccine against Pathological Pyroglutamate-Modified Amyloid Beta for Prevention of Alzheimer's Disease.
Zagorski K, King O, Hovakimyan A, Petrushina I, Antonyan T, Chailyan G, Ghazaryan M, Hyrc KL, Chadarevian JP, Davtyan H, Blurton-Jones M, et al.
International journal of molecular sciences (2023) 2412: . . **IHC; tested species: mouse**

Posttranslational modification impact on the mechanism by which amyloid-β induces synaptic dysfunction.
Grochowska KM, Yuanxiang P, Bär J, Raman R, Brugal G, Sahu G, Schweizer M, Bikbaev A, Schilling S, Demuth HU, Kreutz MR, et al.
EMBO reports (2017) 186: 962-981. . **ICC; tested species: rat**

Glutaminyl cyclase in human cortex: correlation with (pGlu)-amyloid-β load and cognitive decline in Alzheimer's disease.
Morawski M, Schilling S, Kreuzberger M, Waniek A, Jäger C, Koch B, Cynis H, Kehlen A, Arendt T, Hartlage-Rübsamen M, Demuth HU, et al.
Journal of Alzheimer's disease : JAD (2014) 392: 385-400. . **IHC; tested species: human**

Brain pyroglutamate amyloid-β is produced by cathepsin B and is reduced by the cysteine protease inhibitor E64d, representing a potential Alzheimer's disease therapeutic.
Hook G, Yu J, Toneff T, Kindy M, Hook V
Journal of Alzheimer's disease : JAD (2014) 411: 129-49. . **IHC; tested species: mouse**

Glutaminyl cyclase-mediated toxicity of pyroglutamate-beta amyloid induces striatal neurodegeneration.
Becker A, Kohlmann S, Alexandru A, Jagla W, Canneva F, Bäuscher C, Cynis H, Sedlmeier R, Graubner S, Schilling S, Demuth HU, et al.
BMC neuroscience (2013) 14: 108. . **IHC; tested species: human**

Involvement of perineuronal and perisynaptic extracellular matrix in Alzheimer's disease neuropathology.
Morawski M, Brückner G, Jäger C, Seeger G, Matthews RT, Arendt T
Brain pathology (Zurich, Switzerland) (2012) 224: 547-61. . **IHC; tested species: human**

Selective hippocampal neurodegeneration in transgenic mice expressing small amounts of truncated Aβ is induced by pyroglutamate-Aβ formation.
Alexandru A, Jagla W, Graubner S, Becker A, Bäuscher C, Kohlmann S, Sedlmeier R, Raber KA, Cynis H, Rönicke R, Reymann KG, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2011) 3136: 12790-801. . **IHC**

Access the online factsheet including applicable protocols at https://sysy.com/product/218003 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All SYSY antibodies and control proteins/peptides are shipped lyophilized (vacuum freeze-dried). In this form, they remain stable without loss of quality at ambient temperatures for several weeks.

Storage of Sealed Vials after Delivery

- **Unlabeled** and **biotin-labeled antibodies** and **control proteins** should be stored at **4°C** before reconstitution. **Do not freeze lyophilized antibodies**. Temperatures below 0°C may impair performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long-term storage of lyophilized fluorophore-conjugates may cause aggregation.
- **Control peptides** should be stored at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- **Do not use frost-free ("no-frost") freezers.** These units periodically warm to remove ice buildup, causing freeze–thaw cycles that can damage antibodies.
- Store vials in areas with minimal temperature fluctuation - preferably toward the back of the freezer, not on the door.
- Aliquot reconstituted antibodies and store at –20°C to –80°C.
- Avoid very small aliquots (<20 µL), as evaporation and adsorption to tube surfaces can reduce antibody concentration and activity.
- Use the smallest practical storage vial to minimize surface area.
- Adding glycerol to a final concentration of 50% prevents freezing at -20°C, allowing storage in liquid form and effectively avoiding freeze–thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C

Monoclonal Antibodies

- **Ascites and hybridoma supernatant:** Store at -20°C to -80°C
  Prolonged storage at 4°C is not recommended, as proteases present in ascites may degrade antibodies.
- **Purified IgG:** Store at -20°C to -80°C
  Adding a carrier protein (e.g., BSA) enhances long-term stability.
  Many SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Polyclonal Antibodies

- **Crude antisera:** Can be stored at 4°C with antimicrobials added, but -20°C to -80°C is preferred
- **Affinity-purified antibodies:** Less stable than antisera; store at -20°C to -80°C
  Adding a carrier protein such as BSA improves long-term stability.
  Most SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Fluorescence-labeled Antibodies

- Store as a liquid with 1:1 (v/v) glycerol at -20°C, and protect from light exposure

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All purified SYSY antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the volume of deionized water specified in the corresponding datasheet. If a larger final volume is desired, first add the recommended amount of water, then adjust with PBS and, if needed, add a stabilizing carrier protein (e.g., BSA) to a final concentration of 2%. Some SYSY antibodies already contain albumin; please take this into account before adding additional carrier protein.

For complete reconstitution, carefully remove the vial cap. After adding water, briefly vortex the solution. To collect the liquid at the bottom of the vial, place the vial inside a 50 ml centrifuge tube padded with paper and centrifuge briefly.

- If desired, small amounts of azide or thimerosal may be added to prevent microbial growth. This is particularly recommended when storing an aliquot at 4°C.
- After reconstitution of fluorescence-labeled antibodies, add glycerol 1:1 (v/v) to achieve a final concentration of 50%. This prevents freezing at –20°C and keeps the antibody in liquid form, effectively avoiding freeze–thaw cycles.
- Glycerol may also be added to unlabeled primary antibodies as a general measure to prevent freeze–thaw damage.
- For further guidance, please refer to our **storage tips** and recommendations for reconstituted antibodies, control peptides, and control proteins.