SYSY Antibodies

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F4/80

Cat.No. 397 017; Monoclonal rat antibody, 200 µl purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	200 µl purified IgG, lyophilized. Albumin and azide were added for stabilization. For **reconstitution** add 200 µl H_2O. 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 : 250 (AP staining) **IP**: not tested yet **ICC**: not tested yet **IHC**: 1 : 500 **IHC-P (FFPE)**: 1 : 100 **IHC-Fr**: 1 : 500 (see remarks)
Clone	167B3
Subtype	IgG2a (κ light chain)
Immunogen	Synthetic peptide corresponding to residues surrounding AA36 of mouse F4/80 (UniProt Id: Q61549)
Reactivity	Reacts with: mouse (Q61549). No signal: rat. Other species not tested yet.
Remarks	**IHC-Fr**: The following fixatives are possible: methanol, 4% formaldehyde/PFA.

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

Background

F4/80, also known as EMR1 or ADGRE1, is a seven-transmembrane adhesion G protein-coupled receptor that is widely regarded as a canonical surface marker of tissue-resident macrophages in the mouse. It is a member of the ADGRE (EGF-TM7) family and is highly expressed by splenic red pulp macrophages, hepatic Kupffer cells, epidermal Langerhans cells, microglia, and intestinal macrophages, whereas its expression is largely absent from circulating monocytes and most dendritic cell subsets (1,2).
Within the spleen, F4/80 red pulp macrophages are critically involved in the clearance of senescent erythrocytes and the recycling of iron through heme oxygenase-1, thereby contributing to the maintenance of iron homeostasis during blood-borne infections such as malaria (1). Beyond its value as a phenotypic marker, F4/80 has also been implicated in immunoregulatory processes. Notably, F4/80-deficient mice fail to generate the antigen-specific CD8 regulatory T cells required for peripheral tolerance, and administration of anti-F4/80 antibodies inhibits the induction of anterior chamber-associated immune deviation (3).
In inflammatory bowel disease models, an F4/80Ly6C^^{high} macrophage subset expands during dextran sulfate sodium (DSS)-induced colitis and promotes tumor initiation through the secretion of pro-inflammatory cytokines, thereby linking this population to the pathogenesis of colitis-associated cancer (4). Across mammalian species, expression of the F4/80 orthologue ADGRE1 is conserved in monocytes and macrophages; however, the extracellular EGF-like domains are highly variable between species, suggesting a potential role in pathogen recognition (5).

For more information on protein expression pattern, please refer to the overview image in our SYSY Antibodies ATLAS.

Selected General References

Splenic Macrophage Subsets and Their Function during Blood-Borne Infections.
Borges da Silva H et al. Front Immunol (2015) PubMed:26441984

F4/80+Ly6Chigh Macrophages Lead to Cell Plasticity and Cancer Initiation in Colitis.
Shin AE et al. Gastroenterology (2023) PubMed:36634827

ADGRE1 (EMR1, F4/80) Is a Rapidly-Evolving Gene Expressed in Mammalian Monocyte-Macrophages.
Waddell LA et al. Front Immunol (2018) PubMed:30327653

Macrophage heterogeneity in tissues: phenotypic diversity and functions.
Gordon S et al. Immunol. Rev. (2014) PubMed:25319326

The macrophage F4/80 receptor is required for the induction of antigen-specific efferent regulatory T cells in peripheral tolerance.
Lin HH et al. J. Exp. Med. (2005) PubMed:15883173

Access the online factsheet including applicable protocols at https://sysy.com/product/397017 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.