

## CL005

## Monoclonal Antibody to CD5 (Ly-1.1) - Ascites

**Alternate names:**

CD5, LEU1, Lymphocyte antigen T1/Leu-1, T-cell surface glycoprotein CD5

**Quantity:**

0.5 ml

**Background:**

CD5 is a 55kDa T lymphocyte single chain transmembrane glycoprotein. It is present on all mature T lymphocytes, on most thymocytes and on many T cell leukemias and lymphomas. It reacts with a subpopulation of activated B cells. CD5/Lyt1 antigen is a monomeric type I transmembrane glycoprotein expressed on thymocytes, T lymphocytes, and a subset of B lymphocytes, but not on natural killer (NK) cells. It has been identified as the major ligand of the B cell antigen CD72. The frequency of CD5+ B cells exhibits strain dependent variation, and the phenotypic, anatomical, functional, developmental, and pathological characteristics of the CD5+ B cells suggest that they may represent a distinct lineage, known as B1 cells. Binding of CD5 on the T cell surface can augment alloantigen or mitogen induced lymphocyte proliferation and induces increased cytosolic free calcium, IL2 secretion, and IL2R expression. It has been proposed that CD5 negatively regulates signal transduction mediated by the T cell and B cell receptors.

**Uniprot ID:**

[P13379](#)

**NCBI:**

[NP\\_031676.3](#)

**GeneID:**

[12507](#)

**Host / Isotype:**

Mouse / IgG2a

**Clone:**

7-20.6/3

**Immunogen:**

Recipient: 129/ReJ  
Donor: B6-Ly-1a  
Fusion Partner: Spleen from immunized recipient fused with myeloma P3-NSI-Ag4-1

**Format:**

**State:** Lyophilized ascitic fluid  
**Reconstitution:** Restore with 1.0ml of distilled water.

**Applications:**

Cytotoxicity tests.  
Functional analysis.  
Other applications not tested. Optimal dilutions are dependent on conditions and should be determined by the user.

**Specificity:**

Anti-Ly 1.1 monoclonal antibody reacts with T lymphocytes from mouse strains expressing the Ly 1.1 phenotype, but does not react with lymphocytes from mouse strains expressing the Ly 1.2 phenotype.

**Add. Information:**

**STERILITY:**  
This reagent is not sold as sterile, but can be sterilized by filtration if necessary. To minimize loss of volume during filtration, dilute to the final working concentration in the appropriate medium before filtration.

**Storage:**

Prior to and following reconstitution store the antibody at -20°C.  
Avoid repeated freezing and thawing.  
Shelf life: one year from despatch.

**Protocols:**
**Recommended Method for Depleting a Cell Population of Ly 1.1 Positive Lymphocytes:**

1. Prepare a cell suspension from the appropriate tissue in Cytotoxicity Mediuma or equivalent. Remove red cells and dead cells (where necessary) by purification of viable lymphocytes on Lympholyte®-M cell separation medium. After washing, adjust the cell concentration to  $1 \times 10^7$  cells per ml in Cytotoxicity Medium.
2. Add the antibody to a final concentration of 1:250 and mix. Alternatively, pellet the cells and resuspend in antibody diluted 1:250 in Cytotoxicity Medium.
3. Incubate for 60 minutes at 4°C.
4. Centrifuge to pellet the cells and discard the supernatant.
5. Resuspend to the original volume in Low-Tox-M® Rabbit Complementc , diluted to the appropriate concentration in Cytotoxicity Medium. (Recommended concentration included with each batch of Low-Tox-M® Rabbit Complement.)
6. Incubate for 60 minutes at 37°C.
7. Monitor for percent cytotoxicity at this stage, before further processing. For this purpose, remove a small sample from each tube, dilute 1:10 with medium, and add 1/10 volume of 1% Trypan Blue. After 3-5 minutes, score live versus dead cells in a hemacytometer.
8. For functional studies, remove the dead cells from the treated groups before further processing, particularly if the treated cells are to be cultured. This can be done by layering the cell suspension over a separation medium and centrifuging at room temperature as per the instructions provided. Live cells will form a layer at the interface, while the dead cells pellet. The interface can then be collected and washed in Cytotoxicity Medium before being resuspended in the appropriate medium for further processing. Alternatively, the cells can be washed and resuspended in the appropriate medium for further processing immediately after Step #6, provided that the dead cells will not interfere with subsequent assays.

**Recommended Method for Determining Percent of Ly 1.1 Positive Cells in a Population:**

1. Prepare a cell suspension from the appropriate tissue in Cytotoxicity Mediuma or equivalent. Remove red cells (where necessary) by treating cell pellet with 5 times the volume of 0.17M NH<sub>4</sub>Cl-Tris Buffer for 3 minutes at room temperature or by purification on cell separation medium. After washing, adjust cells to  $1 \times 10^6$  cells/ml in Cytotoxicity Mediuma.
2. Add the anti-RT2 monoclonal antibody to a final concentration of 1:500 and mix.
3. Incubate for 60 minutes at 4°C.
4. Centrifuge to pellet the cells and discard the supernatant.
5. Resuspend to the original volume in Cytotoxicity Mediuma with the appropriate concentration of Baby Rabbit Complement b
6. Incubate for 60 minutes at 37°C.
7. Place on ice.
8. Add Trypan Blue, 10% by volume of 1% Trypan Blue (w/v) added 3-5 minutes before

scoring works well. Score live versus dead cells in a hemacytometer.

#### **Antibody Titration by Cytotoxicity Analysis:**

Cell Source: Thymus

Donors: C3H/He C57BL/6J (Ly 1.2)

Cell Concentration: 1x10<sup>6</sup> cells/ml

Complement: Low-Tox-M® Rabbit Complement b

Complement Concentration: 1:18

Procedure: Two stage cytotoxicity as described under Recommended Methods for Determining Percent of Ly 1.1 Positive Cells in a Population.

#### **FUNCTIONAL ANALYSIS**

##### **Method:**

Cells were treated as described in “Recommended Method for Depleting a Cell Population of Ly 1.1 Positive Lymphocytes” on page 2. Treated cells and controls were tested for:

- a) the ability to generate plaque-forming cells (PFC) using a modified Jerne haemolytic plaque assay
- b) the ability to generate cytotoxic T effector cells using a cytotoxic lymphocyte reaction (CTL) assay. Cells were treated both before and after sensitization in the CTL assay. In vitro immunizations were used in all experiments.

##### **Results:**

Cell Source: Splenocytes

Donors: C57BL/6 and C3H/He

Cell Concentration: 1x10<sup>7</sup> cells/ml

Antibody Concentration used: 1:10

Complement: Low-Tox®-M Rabbit Complement

Complement Concentration: 1:10

Treatment of C3H/He splenocytes with anti- Ly 1.1 plus complement was found to reduce the number of plaque-forming cells and inhibit cytotoxic T cell generation indicative of the removal of T helper cell activity. Cytotoxic T effector cell function was not affected (cells treated after sensitization). No effect was observed when C57BL/6 cells were used. These results are consistent with the depletion of T helper cells of the Ly 1.1 phenotype.

##### **Notes:**

- a. Cytotoxicity Medium is RPMI-1640 with 25 mM Hepes buffer and 0.3% bovine serum albumin (BSA). BSA is substituted for the conventionally used fetal calf serum (FCS) because we have found that many batches of FCS contain complement dependent cytotoxins to mouse lymphocytes, thus increasing the background killing in the presence of complement. We recommend that cells not be exposed to FCS prior to or during exposure to antibody and complement. Some batches of BSA also contain complement dependent cytotoxins, resulting in the same problem. We screen for batches of BSA giving low background in the presence of complement and use the selected BSA for preparing Cytotoxicity Medium.
- b. Lympholyte®-M cell separation medium is density separation medium designed

specifically for the isolation of viable mouse lymphocytes. This separation medium provides a high and non-selective recovery of viable mouse lymphocytes, removing red cells and dead cells. The density of this medium is 1.087 - 1.088. Isolation of mouse lymphocytes on cell separation medium of density 1.077 will result in high and selective loss of lymphocytes and should be avoided.

c. Rabbit serum provides the most potent source of complement for use with antibodies to mouse cell surface antigens. However, rabbit serum itself is very toxic to mouse lymphocytes. Low-Tox®-M Rabbit Complement is absorbed to remove toxicity to mouse lymphocytes, while maintaining its high complement activity. When used in conjunction with Cytotoxicity Medium, this reagent provides a highly potent source of complement with minimal background toxicity.

#### Pictures:

#### Cytotoxicity Index

$$C.I. = 100 \times \frac{\% \text{ cyt (antibody + complement)} - \% \text{ cyt (complement alone)}}{100\% - \% \text{ cyt (complement alone)}}$$

Antibody Concentration: 1:500

Strain: C3H/He

Cell Source	C.I.
Thymus	88
Spleen	27
Lymph Node	57

#### Strain Distribution:

Procedure: See page 3

Antibody Concentration: 1:500

Strains tested:

Strain	Phenotype	+/-
C57BL/6J	Ly 1.2	-
CBA/J	Ly 1.1	+
BALB/c	Ly 1.2	-
C3H/He	Ly 1.1	+
B6Ly1.1	Ly 1.2	+
A.TH	Ly 1.2	-
A.TL	Ly 1.2	-
B.10A(4R)	Ly 1.2	-

#### Tissue Distribution

