

## DESCRIPTION

|                           |   |
|---------------------------|---|
| <b>Species Reactivity</b> | Human   |
| <b>Specificity</b>        | Detects human CD99 in direct ELISAs.  |
| <b>Source</b>             | Monoclonal Mouse IgG <sub>1</sub> Clone # 1021527   |
| <b>Purification</b>       | Protein A or G purified from hybridoma culture supernatant  |
| <b>Immunogen</b>          | Mouse myeloma cell line, NS0-derived human CD99<br>Asp23-Asp122<br>Accession # P14209   |
| <b>Conjugate</b>          | Alexa Fluor 350<br>Excitation Wavelength: 346 nm<br>Emission Wavelength: 442 nm   |
| <b>Formulation</b>        | Supplied 0.2 mg/mL in a saline solution containing BSA and Sodium Azide.<br><br>*Contains <0.1% Sodium Azide, which is not hazardous at this concentration according to GHS classifications. Refer to the Safety Data Sheet (SDS) for additional information and handling instructions. |

## APPLICATIONS

**Please Note:** Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

|                       | Recommended Concentration       | Sample                 |
|-----------------------|---------------------------------|------------------------|
| <b>Flow Cytometry</b> | 0.25-1 µg/10 <sup>6</sup> cells | Human PBMC lymphocytes |

## PREPARATION AND STORAGE

|                                |  |
|--------------------------------|--|
| <b>Shipping</b>                | The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.                                  |
| <b>Stability &amp; Storage</b> | <b>Protect from light. Do not freeze.</b> <ul style="list-style-type: none"> <li>12 months from date of receipt, 2 to 8 °C as supplied.</li> </ul> |

## BACKGROUND

CD99 (also named MIC2, E2 and thymic leukemia antigen) is the founding member of the CD99 family of molecules. The CD99 family contains four members; CD99, CD99L2, XG and the pseudogene CD99L1 (1, 2, 3). Native human CD99 is 32 kDa in size and exists as a type I transmembrane glycoprotein. This is referred to as the long, or type I isoform. It is synthesized as a 185 amino acid (aa) precursor that contains a 22 aa signal sequence, a 100 aa extracellular domain (ECD), a 25 aa transmembrane segment, and a 38 aa cytoplasmic region (4). The ECD contains no identifiable motifs, N-linked glycosylation sites, or cysteine residues; it does possess sites for O-linked glycosylation. The cytoplasmic region, albeit short, does have signal transduction capability (5). There are apparently multiple isoforms for human CD99. One shows a 16 aa deletion in the ECD (aa 34 - 49), a second shows a 38 aa deletion in the cytoplasmic region (aa 122 - 159), and a third exhibits a three aa truncation at the C-terminus (6, 7, 8). The best studied isoform shows an Asp-Gly substitution for the C-terminal 27 amino acids. This is referred to as the 28 kDa type II isoform (9). The type I and II isoforms have distinctive signal transduction pathways (FAK-src for type I; PI3K plus src-ERK1/2 for type II), and mediate clearly different biological outcomes (5, 9, 10). The two numbered isoforms may or may not coexist on the same cells. Peripheral T cells have only the long isoform, while double-positive thymocytes express both isoforms. What is unclear is the monomeric vs. dimeric status of CD99. In mouse, CD99 reportedly forms disulfide-linked homodimers (11). In human, however, CD99 is reportedly monomeric if only a type I isoform, and a covalent heterodimer if coexpressing type I and II isoforms (12, 13). Cells known to express CD99 include fibroblasts, neutrophils, T cells, double-positive thymocytes, CD34+ stem cells, monocytes and endothelial cells (2, 12, 14, 15). Homophilic interaction between CD99 on the neutrophil and CD99 on the endothelial cell regulates the transendothelial migration of neutrophils during inflammation (16). Human CD99 is only 48% aa identical to mouse CD99 (17).

## References:

1. Wilson, M.D. *et al.* (2006) *Physiol Genomics* **27**:201.
2. Petri, B. and M.G. Bixel (2006) *FEBS J.* **273**:4399.
3. Suh, Y.H. *et al.* (2003) *Gene* **307**:63.
4. Gelin, C. *et al.* (1989) *EMBO J.* **8**:3253.
5. Byun, H.-J. *et al.* (2006) *J. Biol. Chem.* **281**:34833.
6. GenBank Accession # EAW98698.
7. GenBank Accession # EAW98699.
8. GenBank Accession # EAW98700.
9. Hahn, H.-J. *et al.* (1997) *J. Immunol.* **159**:2250.
10. Scotlandi, K. *et al.* (2007) *Oncogene* **Apr 30**; [Epub ahead of print].
11. Park, S.H. *et al.* (2005) *Gene* **353**:177.
12. Schenkel, A.R. *et al.* (2002) *Nat. Immunol.* **3**:143.
13. Alberti, I. *et al.* (2002) *FASEB J.* **16**:1946.
14. Imbert, A.-M. *et al.* (2006) *Blood* **108**:2578.
15. Dworzak, M.N. *et al.* (1994) *Blood* **83**:415.
16. Lou, O. *et al.* (2007) *J. Immunol.* **178**:1136.
17. Shiratori, I. *et al.* (2004) *J. Exp. Med.* **199**:525.

**PRODUCT SPECIFIC NOTICES**

This product is provided under an agreement between Life Technologies Corporation and R&D Systems, Inc, and the manufacture, use, sale or import of this product is subject to one or more US patents and corresponding non-US equivalents, owned by Life Technologies Corporation and its affiliates. The purchase of this product conveys to the buyer the non-transferable right to use the purchased amount of the product and components of the product only in research conducted by the buyer (whether the buyer is an academic or for-profit entity). The sale of this product is expressly conditioned on the buyer not using the product or its components (1) in manufacturing; (2) to provide a service, information, or data to an unaffiliated third party for payment; (3) for therapeutic, diagnostic or prophylactic purposes; (4) to resell, sell, or otherwise transfer this product or its components to any third party, or for any other commercial purpose. Life Technologies Corporation will not assert a claim against the buyer of the infringement of the above patents based on the manufacture, use or sale of a commercial product developed in research by the buyer in which this product or its components was employed, provided that neither this product nor any of its components was used in the manufacture of such product. For information on purchasing a license to this product for purposes other than research, contact Life Technologies Corporation, Cell Analysis Business Unit, Business Development, 29851 Willow Creek Road, Eugene, OR 97402, Tel: (541) 465-8300. Fax: (541) 335-0354.