Technical Data Sheet

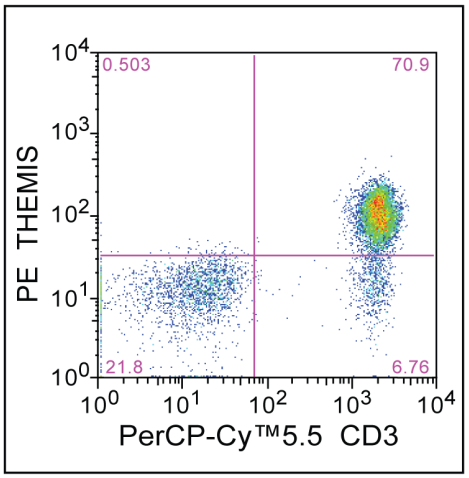
PE Mouse anti-Human THEMIS

Product Information

Material Number:	**562588**
Alternate Name:	TSEPA; THMS1; C6orf190; C6orf207; SPOT; GASP; GRB2-associated protein
Size:	50 tests
Vol. per Test:	5 µl
Clone:	Q13-1103
Immunogen:	Human THEMIS Recombinant Protein
Isotype:	Mouse IgG1, κ
Reactivity:	QC Testing: Human Not Reactive: Mouse
Storage Buffer:	Aqueous buffered solution containing BSA and ≤0.09% sodium azide.

Description

The Q13-1103 monoclonal antibody specifically binds to human THEMIS (Thymocyte-expressed molecule involved in selection). The human *THEMIS* gene encodes a 73-kDa signaling protein that is also known as thymocyte selection pathway associated (TSEPA), signaling phosphoprotein specific for T cells (SPOT) and GRB2-associated protein (GASP). The homologous mouse protein is encoded by the *Themis* gene. THEMIS mRNA is detected in the thymus, lymph nodes, spleen but not in the bone marrow or nonlymphoid tissues. It is expressed by all thymocytes including double- (high levels) and single-positive αβ T cells, γδ T cells and peripheral T cells (low levels) but not by B cells and NK cells. THEMIS plays a central role in T cell development including positive and negative selection processes in the thymus. It is involved in TCR signaling and gets phosphorylated quickly after TCR stimulation. In the mouse system, *Themis*-deficient double-positive thymocytes reportedly expressed lower levels of genes involved in later stages of T cell development including those related to cellular metabolism, cell cycle and survival functions. *Themis*-deficient thymocytes showed impaired selection that lead to the production of fewer mature thymocytes. The Q13-1103 antibody crossreacted with mouse Themis in Western blot testing of cellular lysates but did not crossreact when tested by immunofluorescent staining and flow cytometric analysis of cells.



Multicolor flow cytometric analysis of THEMIS expressed in human PBMC. *Human peripheral blood mononuclear cells (PBMC) were isolated from freshly drawn EDTA-treated blood. The cells were fixed and permeabilized using reagents from the BD Cytofix/Cytoperm™ Fixation/Permeabilization Solution Kit (Cat. No. 554714). The cells were then stained with PE Mouse Anti-Human THEMIS and PerCP-Cy™5.5 CD3 (Cat. No. 560835) antibodies. The two-color dot plot was derived from gated events with the forward and side light-scattering characteristics of intact cells. Flow cytometry was performed using a BD™ LSRII Flow Cytometer System.*

Preparation and Storage

Store undiluted at 4°C and protected from prolonged exposure to light. Do not freeze.

The monoclonal antibody was purified from tissue culture supernatant or ascites by affinity chromatography.

The antibody was conjugated with R-PE under optimum conditions, and unconjugated antibody and free PE were removed.

Application Notes

Application

Intracellular staining (flow cytometry)	Routinely Tested

BD Biosciences

bdbiosciences.com

United States	Canada	Europe	Japan	Asia Pacific	Latin America/Caribbean
877.232.8995	800.979.9408	32.53.720.550	0120.8555.90	65.6861.0633	55.11.5185.9995

For country contact information, visit **bdbiosciences.com/contact**

Suggested Companion Products

Catalog Number	Name	Size	Clone
554680	PE Mouse IgG1, κ Isotype Control	0.1 mg	MOPC-21
554656	Stain Buffer (FBS)	500 ml	(none)
554714	BD Cytofix/Cytoperm™ Fixation/Permeablization Kit	250 tests	(none)
560835	PerCP-Cy™5.5 Mouse Anti-Human CD3	50 tests	UCHT1

Product Notices

1. This reagent has been pre-diluted for use at the recommended Volume per Test. We typically use 1 × 10^6 cells in a 100-µl experimental sample (a test).
2. An isotype control should be used at the same concentration as the antibody of interest.
3. For fluorochrome spectra and suitable instrument settings, please refer to our Multicolor Flow Cytometry web page at www.bdbiosciences.com/colors.
4. Please refer to www.bdbiosciences.com/pharmingen/protocols for technical protocols.
5. Caution: Sodium azide yields highly toxic hydrazoic acid under acidic conditions. Dilute azide compounds in running water before discarding to avoid accumulation of potentially explosive deposits in plumbing.
6. Source of all serum proteins is from USDA inspected abattoirs located in the United States.
7. Cy is a trademark of Amersham Biosciences Limited.

References

Fu G, Vallée S, Rybakin V, et al. Themis controls thymocyte selection through regulation of T cell antigen receptor-mediated signaling. *Nat Immunol.* 2009; 10(8):848-856. (Biology)

Johnson AL, Aravind L, Shulzhenko N, et al. Themis is a member of a new metazoan gene family and is required for the completion of thymocyte positive selection. *Nat Immunol.* 2009; 10(8):831-838. (Biology)

Lesourne R, Uehara S, Lee J, et al. Themis, a T cell-specific protein important for late thymocyte development. *Nat Immunol.* 2009; 10(8):840-847. (Biology)

Patrick MS, Oda H, Hayakawa K, et al. Gasp, a Grb2-associating protein, is critical for positive selection of thymocytes. *Proc Natl Acad Sci U S A.* 2009; 106(38):16345-16350. (Biology)

BD Biosciences

bdbiosciences.com

United States	Canada	Europe	Japan	Asia Pacific	Latin America/Caribbean
877.232.8995	800.979.9408	32.53.720.550	0120.8555.90	65.6861.0633	55.11.5185.9995

For country contact information, visit **bdbiosciences.com/contact**