Granzyyme B Monoclonal Antibody (GB12), PE

Catalog Number: MHGB04

Details

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Species Reactivity

- **Tested species reactivity**: Human
- **Published species reactivity**: Mouse, Human, Rhesus monkey, Not Applicable

**Tested Applications**

- **Flow Cytometry (Flow)**: Assay Dependent

**Published Applications**

- **Flow Cytometry (Flow)**: See 29 publications below
- **Miscellaneous PubMed (MISC)**: See 15 publications below
- **Immunohistochemistry (Paraffin) (IHC (P))**: See 1 publications below

* Suggested working dilutions are given as a guide only. It is recommended that the user titrate the product for use in their own experiment using appropriate negative and positive controls.

Background/Target Information

Granzyme A and granzyme B are serine proteases that mediate apoptotic signaling in cytotoxic T lymphocytes (CTL) and in natural killer (NK) cells. Both granzyme A and granzyme B are synthesized as inactive proenzymes, and they are stored within cytolytic granules and released by effector cells during degradation. This antibody should be useful for the localization of granzyme B-containing lytic granules and for the characterization of activated CTLs or NK cells.

MHGB04 was used in flow cytometry to examine the contribution of HIV-derived conserved elements in vaccination

Journal of Immunology (Baltimore, Md. : 1950) (Nov 2016; 197: 3999)
“DNA Prime-Boost Vaccine Regimen To Increase Breadth, Magnitude, and Cytotoxicity of the Cellular Immune Responses to Subdominant Gag Epitopes of Simian Immunodeficiency Virus and HIV.”

PubMed Article URL: http://dx.doi.org/10.4049/jimmunol.1600697

MHGB04 was used in flow cytometry to elucidate the marked reduction of Nkp44/Nkp46-double positive natural killer cells by celiac disease-related inflammation

Not Applicable / 1:100
PloS one (May 2016; 11: null)
“Celiac Disease-Related Inflammation Is Marked by Reduction of Nkp44/Nkp46 Double Positive Natural Killer Cells.”

Author(s): Marafini I, Monteleone I, Dl Fusco D, Sedda S, Cupi ML, Fina D, Paoluzzi AO, Pallone F, Monteleone G
PubMed Article URL: http://dx.doi.org/10.1371/journal.pone.0155103

MHGB04 was used in flow cytometry to investigate the differentiation and function of murine gamma-herpesvirus 68 (MHV-68) -specific CD4(+) T cells using gp150-specific TCR-transgenic mice

Mouse / Not Cited
Journal of Immunology (Baltimore, Md. : 1950) (Mar 2015; 194: 2746)
“Functional heterogeneity in the CD4+ T cell response to murine -herpesvirus 68.”

Author(s): Hu Z, Blackman MA, Kaye KM, Usherwood EJ
PubMed Article URL: http://dx.doi.org/10.4049/jimmunol.1401928

MHGB04 was used in flow cytometry to study the effect of FTY720 treatment on CD8 T-cells

Mouse / Not Cited
“Interplay between regulatory T cells and PD-1 in modulating T cell exhaustion and viral control during chronic LCMV infection.”

PubMed Article URL: http://dx.doi.org/10.1084/jem.20132577

MHGB04 was used in flow cytometry to compare vaccination with highly conserved gag elements versus full-length gag DNA.

Rhesus monkey / Not Cited
PloS one (Jan 2014; 9: null)
“Altered response hierarchy and increased T-cell breadth upon HIV-1 conserved element DNA vaccination in macaques.”

PubMed Article URL: http://dx.doi.org/10.1371/journal.pone.006254

MHGB04 was used in flow cytometry to conclude that increased detection of granzyme B in cytotoxic T cells and natural killer cells is an immune signature for lymphocyte activation in hemophagocytic lymphohistiocytosis

Rhesus monkey / Not Cited
Frontiers in immunology (Mar 2013; 3: null)
“Elevated Granzyme B in Cytotoxic Lymphocytes is a Signature of Immune Activation in Hemophagocytic Lymphohistiocytosis.”

PubMed Article URL: http://dx.doi.org/10.3389/fimmu.2013.00072
MHGB04 was used in flow cytometry to study the use of an IL-2 adjuvant when vaccinating rhesus macaques.

**Rhesus monkey / Not Cited**

Human vaccines and immunotherapeutics (Nov 2012; 8: 1620)

"IL-12 DNA as molecular vaccine adjuvant increases the cytotoxic T cell responses and breadth of humoral immune responses in SIV DNA vaccinated macaques."


PubMed Article URL:http://dx.doi.org/10.4161/hiv.21407

MHGB04 was used in flow cytometry to study TLR7 knockout mice infected with lymphocytic choriomeningitis virus.

**Mouse / 1:50**

Cell host and microbe (Jun 2012; 11: 643)

"Toll-like receptor 7 is required for effective adaptive immune responses that prevent persistent virus infection."

Author(s): Walsh KB, Teijaro JR, Zuniga E, Welch MJ, Fremden GM, Blackburn SD, von Tiehl KF, Wherry EJ, Flavell RA, Oldstone MB

PubMed Article URL:http://dx.doi.org/10.1016/j.chom.2012.04.016

MHGB04 was used in flow cytometry to elucidate the protective role of CD8(+) T cells against Histoplasma capsulatum.

**Mouse / Not Cited**

Infection and immunity (Nov 2011; 79: 4493)

"Immunization with apoptotic phagocytes containing Histoplasma capsulatum activates functional CD8(+) T cells to protect against histoplasmosis."

Author(s): Hsieh SH, Lin JS, Huang JH, Wu SY, Chu CL, Kung JT, Wu-Hsieh BA

PubMed Article URL:http://dx.doi.org/10.1128/IAI.05350-11

MHGB04 was used in flow cytometry to investigate the role of CD8 T cells to the brain and liver damage observed during infection with Plasmodium berghei ANKA.

**Mouse / Not Cited**

Infection and immunity (May 2011; 79: 1882)

"High parasite burdens cause liver damage in mice following Plasmodium berghei ANKA infection independently of CD8(+) T cell-mediated immune pathology."

Author(s): Haque A, Best SE, Amante FH, Ammerdorffer A, de Labastida F, Pereira T, Ramm GA, Engwerda CR

PubMed Article URL:http://dx.doi.org/10.1128/IAI.01210-10

MHGB04 was used in flow cytometry to identify conditions in which granzyme B is produced by human B cells.

**Mouse / Not Cited**


"Human B cells secrete granzyme B when recognizing viral antigens in the context of the acute phase cytokine IL-21."


PubMed Article URL:http://dx.doi.org/10.4049/jimmunol.0901066

MHGB04 was used in flow cytometry to study the role of the transcription regulator CCCTC-binding factor in Th2 differentiation in HIV infected patients.

**Not Applicable / Not Cited**

Journal of immunology (Baltimore, Md. : 1950) (Jan 2009; 182: 999)

"Critical role for the transcription regulator CCCTC-binding factor in the control of Th2 cytokine expression."


PubMed Article URL:http://dx.doi.org/null

MHGB04 was used in flow cytometry to study Vgamma2Vdelta2 T cells in human cytomegalovirus vector containing intron A.

**Not Applicable / Not Cited**


"Impacts of HIV infection on Vgamma2Vdelta2 T cell phenotype and function: a mechanism for reduced tumor immunity in AIDS."

Author(s): Cummings JS, Cairo C, Armstrong C, Davis CE, Pauza CD

PubMed Article URL:http://dx.doi.org/10.1189/jlb.1207847

MHGB04 was used in flow cytometry to analyze protection against Plasmodium berghei by a single-dose simian adenovirus vector using a human cytomegalovirus promoter containing intron A.

**Not Applicable / Not Cited**

Journal of virology (Apr 2008; 82: 3822)

"Single-dose protection against Plasmodium berghei by a simian adenovirus vector using a human cytomegalovirus promoter containing intron A."

Author(s): Srithar S, Reyes-Sandoval A, Draper SJ, Moore AG, Gilbert SC, Gao GP, Wilson JM, Hill AV

PubMed Article URL:http://dx.doi.org/10.1128/JVI.02568-07
MHGB04 was used in flow cytometry to test if granzyme B is produced in the myeloid cell lines HL-60 and U937, in CD34+ stem cells, and in PMN derived from CD34+ cells in vitro.

Not Applicable / Not Cited

Molecular immunology (Mar 2008; 45: 1761)

"Expression of granzyme B in peripheral blood polymorphonuclear neutrophils (PMN), myeloid cell lines and in PMN derived from haematopoietic stem cells in vitro."

Author(s):Wagner C, Stegmaier S, Hänisch GM

PubMed Article URL: http://dx.doi.org/10.1016/j.molimm.2007.09.033

MHGB04 was used in flow cytometry to elucidate the developmental relationship between natural killer subsets.

Not Applicable / Not Cited


"CD56brightCD16- killer Ig-like receptor- NK cells display longer telomeres and acquire features of CD56dim NK cells upon activation."


PubMed Article URL: http://dx.doi.org/10.1159/000084482

MHGB04 was used in flow cytometry to investigate the role of JNK2 in CD8+ T cell response and effector functions.

Not Applicable / Not Cited

European journal of immunology (Mar 2007; 37: 818)

"JNK2 negatively regulates CD8+ T cell effector function and anti-tumor immune response."

Author(s): Tao J, Gao Y, Li MO, He W, Chen L, Harvey B, Davis RJ, Flavell RA, Yin Z

PubMed Article URL: http://dx.doi.org/10.1002/eji.200636726

MHGB04 was used in flow cytometry to study CD4(-)CD25 (+) regulatory T cells in B-cell non-Hodgkin's lymphoma and attenuation of CD8(-) T-cell function.

Not Applicable / 1:200

Cancer research (Oct 2006; 66: 10145)

"Attenuation of CD8(+) T-cell function by CD4(-)CD25(+) regulatory T cells in B-cell non-Hodgkin's lymphoma."

Author(s): Yang ZZ, Novak AJ, Ziesmer SC, Wiltzius TE, Ansell SM

PubMed Article URL: http://dx.doi.org/10.1118/0008-5472.CAN-06-1822

MHGB04 was used in flow cytometry to determine the frequency, phenotype, and function of peripheral CD4+ CD8+ T cells in rhesus macaques infected with simian immunodeficiency virus.

Not Applicable / Not Cited

Immunology (Oct 2006; 119: 232)

"Expression of CD8alpha identifies a distinct subset of effector memory CD4+ T lymphocytes."

Author(s): Macchia I, Gauduin MC, Kaur A, Johnson RP

PubMed Article URL: http://dx.doi.org/10.1111/j.1365-2567.2006.02428.x

MHGB04 was used in flow cytometry to study interaction between CD4+CD25+ T cells and B cells.

Not Applicable / Not Cited

Blood (May 2006; 107: 3925)

"Activated CD4+CD25+ T cells selectively kill B lymphocytes."

Author(s): Zhao DM, Thornton AM, DiPaolo RJ, Shevach EM

PubMed Article URL: http://dx.doi.org/10.1182/blood-2005-11-4502

MHGB04 was used in flow cytometry to test if perforin polymorphisms influence the progression of HIV infection.

Not Applicable / Not Cited

International journal of immunogenetics (Apr 2006; 33: 73)

"Polymorphism in the proximal promoter region of the perforin gene and its impact on the course of HIV infection."

Author(s): Mclrtroy D, Meyer L, Dudoit Y, Samri A, Delfraissy JF, Autran B, Debré P, Theodorou I

PubMed Article URL: http://dx.doi.org/10.1111/j.1365-2567.2006.00571.x

MHGB04 was used in flow cytometry to evaluate the use of a bispecific antibody to treat human Ep-CAM-overexpressing carcinomas.

Not Applicable / Not Cited

Molecular immunology (Mar 2006; 43: 1129)

"MT110: a novel bispecific single-chain antibody construct with high efficacy in eradicating established tumors."


PubMed Article URL: http://dx.doi.org/10.1002/eji.200636726

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Molecular immunology (Mar 2006; 43: 1129)

"MT110: a novel bispecific single-chain antibody construct with high efficacy in eradicating established tumors."


PubMed Article URL: http://dx.doi.org/10.1002/eji.200636726

MHGB04 was used in flow cytometry to review characteristics of non-T, non-B cell CD4+CD56+ neoplasms with lymphoblastic morphology.

Not Applicable / Not Cited

European journal of haematology (Oct 2005; 75: 346)

"Extensive flow cytometric characterization of plasmacytoid dendritic cell leukemia cells."


PubMed Article URL: http://dx.doi.org/10.1111/j.1600-0609.2005.00513.x
MHGB04 was used in flow cytometry to analyze triplets infected with HHV-8 and the development of hemophagocytic lymphohistiocytosis.

**Blood** (Aug 2005; 106: 1203)

"Development of hemophagocytic lymphohistiocytosis in triplets infected with HHV-8."

Author(s): Grossman WJ, Radhi M, Schauer D, Gerday E, Grose C, Goldman FD

PubMed Article URL: http://dx.doi.org/10.1182/blood-2005-03-0950

MHGB04 was used in flow cytometry to analyze ocular herpes simplex virus-1 infection and the migration and development of protective CD8+ T cells into the nervous system.


"Development and migration of protective CD8+ T cells into the nervous system following ocular herpes simplex virus-1 infection."

Author(s): Lang A, Nikolah-Zugich J

PubMed Article URL: http://dx.doi.org/null

MHGB04 was used in flow cytometry to study granymes A and B and differential expression in human cytotoxic lymphocyte subsets and T regulatory cells.

**Blood** (Nov 2004; 104: 2840)

"Differential expression of granymes A and B in human cytotoxic lymphocyte subsets and T regulatory cells."

Author(s): Guemeneur L, Belloeil L, Michallet MC, Angelov G, Tomkowiak M, Revillard JP, Marvel J

PubMed Article URL: http://dx.doi.org/null

MHGB04 was used in flow cytometry to assess the impact of nucleotide synthesis inhibition on CD8 T cell differentiation.

**Blood** (Aug 2004; 104: 905)

"Human neutrophils lack granzyme A, granzyme B, and perforin."

Author(s): Metkar SS, Froelich CJ

PubMed Article URL: http://dx.doi.org/10.1182/blood-2004-03-0888

### 15 Miscellaneous PubMed References

#### Species / Dilution

**Summary**

MHGB04 was used in flow cytometry to demonstrate that CTLA-4 promotes Tc17 differentiation and robust Tc17 responses.

**Mouse / Not Cited**

European journal of immunology (Jul 2014; 44: 2139)

"CTLA-4 (CD152) enhances the Tc17 differentiation program."


PubMed Article URL: http://dx.doi.org/10.1002/eji.201334397

MHGB04 was used in flow cytometry to investigate the effect of CpG and IL-21 treatment on B-cell chronic lymphocytic leukemia.

**Human / Not Cited**

International immunology (Jul 2014; 26: 383)

"B-CLL cells acquire APC- and CTL-like phenotypic characteristics after stimulation with CpG ODN and IL-21."


PubMed Article URL: http://dx.doi.org/10.1038/intimm/dxu001

MHGB04 was used in flow cytometry to assess the impact of nucleotide synthesis inhibition on CD8 T cell differentiation.

**Mouse / Not Cited**

Journal of virology (Feb 2013; 87: 1373)

"Alternative serotype adenovirus vaccine vectors elicit memory T cells with enhanced anamnestic capacity compared to Ad5 vectors."

Author(s): Penaloza-MacMaster P, Provine NM, Ra J, Bordinucci EN, McNally A, Simmons NL, Lampietro MJ, Barouch DH

PubMed Article URL: http://dx.doi.org/10.1128/JVI.02058-12
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<td>Human / Not Cited</td>
<td>MHGB04 was used in flow cytometry to examine the effect of n-3 PUFA-docosahexaenoic acid bladder and pancreatic cancer cells.</td>
<td><a href="http://dx.doi.org/10.1016/j.jnutbio.2011.01.010">Link</a></td>
<td>D'Eliose D, Manzi L, Merendino N, Velotti F</td>
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<td>Human / Not Cited</td>
<td>MHGB04 was used in flow cytometry to determine the role of granzyme B in immune regulation during viral infections.</td>
<td><a href="http://dx.doi.org/10.1049/jimmunol.1100891">Link</a></td>
<td>Mahnke YD, Saqr A, Hazenfeld S, Brady RC, Roederer M, Subramanian RA</td>
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<td>Mouse / Not Cited</td>
<td>MHGB04 was used in flow cytometry to examine the HA-specific T-cell responses among a cohort of young and elderly influenza vaccines.</td>
<td><a href="http://dx.doi.org/10.1049/jimmunol.1100891">Link</a></td>
<td>Mahnke YD, Saqr A, Hazenfeld S, Brady RC, Roederer M, Subramanian RA</td>
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<td>Human / Not Cited</td>
<td>American journal of transplantation : official journal of the American Society of Transplantation and the American Society of Transplant Surgeons (Sep 2011; 11: 1825) &quot;Minor antigens on transfused RBCs crossprime CD8 T cells but do not induce full effector function.&quot;</td>
<td><a href="http://dx.doi.org/10.1182/blood-2010-08-303123">Link</a></td>
<td>Desmaret M, Mylavanam G, Waller EK, Josephson CD, Pack C, Lukacher AE, Zimring JC</td>
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<td>Mouse / Not Cited</td>
<td>MHGB04 was used in flow cytometry to examine the IRF4-Blimp1-Bc16 regulatory axis in NK development</td>
<td><a href="http://dx.doi.org/10.1182/blood-2010-08-303123">Link</a></td>
<td>Kallies A, Carotta S, Huntington ND, Bernard NJ, Tarlinton DM, Smyth MJ, Nutt SL</td>
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<tr>
<td>Mouse / Not Cited</td>
<td>MHGB04 was used in flow cytometry to report that NAD(+) regulates the survival, phenotype, and function of T regulatory cells via the ART2-P2X7 pathway</td>
<td><a href="http://dx.doi.org/10.1084/jem.20091154">Link</a></td>
<td>Klages K, Mayer CT, Lahk K, Loddenkemper C, Teng MW, Ngioiw SF, Smyth MJ, Hamann A, Huehn J, Sparwasser T</td>
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<td>Human / Not Cited</td>
<td>MHGB04 was used in flow cytometry to examine red blood cells as an immunogen.</td>
<td><a href="http://dx.doi.org/10.1084/jem.20091154">Link</a></td>
<td>Klages K, Mayer CT, Lahk K, Loddenkemper C, Teng MW, Ngioiw SF, Smyth MJ, Hamann A, Huehn J, Sparwasser T</td>
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<td>Mouse / Not Cited</td>
<td>MHGB04 was used in flow cytometry to study Vgamma2Vdelta2 T cells from Caucasian or African American donors</td>
<td><a href="http://dx.doi.org/10.1084/jem.20091154">Link</a></td>
<td>Klages K, Mayer CT, Lahk K, Loddenkemper C, Teng MW, Ngioiw SF, Smyth MJ, Hamann A, Huehn J, Sparwasser T</td>
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<td>Rhesus monkey / Not Cited</td>
<td>MHGB04 was used in flow cytometry to investigate changes to macaque NK-cell subsets during infection with SIV</td>
<td><a href="http://dx.doi.org/10.1084/jem.20091154">Link</a></td>
<td>Reeves RK, Gillis J, Wong FE, Yu Y, Connelle M, Johnson RP</td>
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MHGB04 was used in flow cytometry to examine the effect of n-3 PUFA-docosahexaenoic acid bladder and pancreatic cancer cells. The Journal of nutritional biochemistry (May 2012; 23: 452) "Docosahexaenoic acid inhibits invasion of human RT112 urinary bladder and PT45 pancreatic carcinoma cells via down-modulation of granzyme B expression." Author(s): D'Eliose D, Manzi L, Merendino N, Velotti F PubMed Article URL: [Link](http://dx.doi.org/10.1016/j.jnutbio.2011.01.010)
MHGB04 was used in flow cytometry to examine rhesus cytomegalovirus-specific CD8+ T lymphocytes.

**Human / Not Cited**

Journal of immunological methods (Aug 2007; 325: 20)  
"Flow cytometric detection of degranulation reveals phenotypic heterogeneity of degranulating CMV-specific CD8+ T lymphocytes in rhesus macaques."  
Author(s): Chan KS, Kaur A  
PubMed Article URL: [http://dx.doi.org/10.1016/j.jim.2007.05.011](http://dx.doi.org/10.1016/j.jim.2007.05.011)

MHGB04 was used in flow cytometry to investigate the role of cytotoxic effector-memory CD8(+) T cell during persistent viral infection.

**Mouse / Not Cited**

"Cutting edge: rapid in vivo CTL activity by polyoma virus-specific effector and memory CD8+ T cells."  
Author(s): Byers AM, Kemball CC, Moser JM, Lukacher AE  
PubMed Article URL: [http://dx.doi.org/10.1088/0264-9269/20/7/307](http://dx.doi.org/10.1088/0264-9269/20/7/307)

MHGB04 was used in flow cytometry to assess genetic variation in granzyme B.

**Human / 10 µg/ml**

Proceedings of the National Academy of Sciences of the United States of America (Mar 2003; 100: 2562)  
"A triple-mutated allele of granzyme B incapable of inducing apoptosis."  
PubMed Article URL: [http://dx.doi.org/10.1073/pnas.0437935100](http://dx.doi.org/10.1073/pnas.0437935100)

### 1 Immunohistochemistry (Paraffin) References

**Species / Dilution**  
**Summary**

MHGB04 was used in immunohistochemistry - paraffin section to test the efficacy of DNA vaccination with anaplastic lymphoma kinase in a mouse model of anaplastic large cell lymphoma

<table>
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<th>Not Applicable / 1:50</th>
<th>Nature medicine (Jun 2008; 14: 676)</th>
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<td><strong>Summary</strong></td>
<td>&quot;The anaplastic lymphoma kinase is an effective oncoantigen for lymphoma vaccination.&quot;</td>
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<td>Author(s): Chiarle R, Martinengo C, Mastini C, Ambrogio C, D’Escamard V, Forni G, Inghirami G</td>
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<td>PubMed Article URL: <a href="http://dx.doi.org/10.1038/nm1769">http://dx.doi.org/10.1038/nm1769</a></td>
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