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(71) Applicant: **ASCENDO BIOTECHNOLOGY, INC.** [CN/CN]; 8F, No. 1, Alley 30, Lane 358, Ruiguang Rd., Neihu District, Taipei 11492 (TW).

(72) Inventor; and
(71) Applicant: **LEE, Frank Wen-Chi** [US/US]; c/o Ascendo Biotechnology, Inc., 8F, No. 1, Alley 30, Lane 358, Ruiguang Rd., Neihu District, Taipei 11492 (TW).

(72) Inventors: **LU, Yen-Ta**; c/o Ascendo Biotechnology, Inc., 8F, No. 1, Alley 30, Lane 358, Ruiguang Rd., Neihu District, Taipei 11492 (TW). **CHANG, Chia-Ming**; c/o Ascendo Biotechnology, Inc., 8F, No. 1, Alley 30, Lane 358, Ruiguang Rd., Neihu District, Taipei 11492 (TW). **HUANG, Ping-Yen**; c/o Ascendo Biotechnology, Inc., 8F, No. 1, Alley 30, Lane 358, Ruiguang Rd., Neihu District, Taipei 11492 (TW). **TSAI, I-Fang**; c/o Ascendo Biotechnology, Inc., 8F, No. 1, Alley 30, Lane 358, Ruiguang Rd., Neihu District, Taipei 11492 (TW).

(74) Agent: **LIANG, Chyau, T.** et al.; Liang Legal Group, PLLC, 6020 Annapolis St., Houston, Texas 77005 (US).

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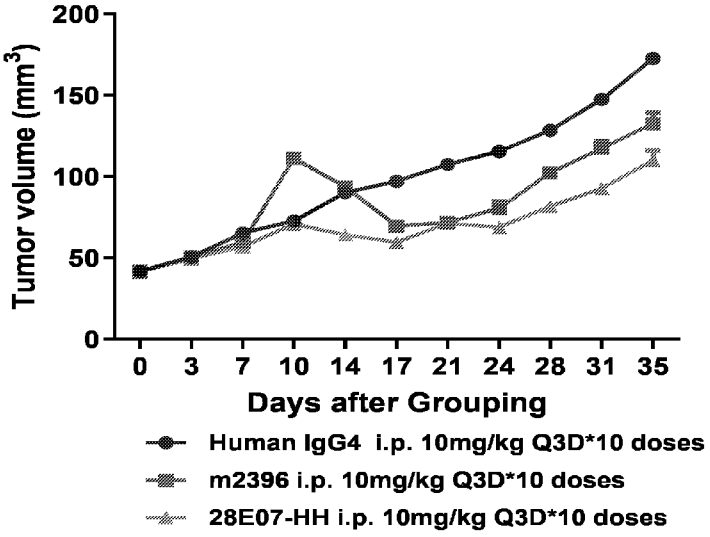

FIG. 6

(57) Abstract: Monoclonal antibodies against human Mac-1 are provided. These antibodies can bind to different states of Mac-1 so as to alter the biofunctions of Mac-1. These antibodies can modulate Th1/Th2 cytokine secretions by TLR-activated immune cells and can be used for the treatments of diseases related to acute and chronic inflammatory disorders, such as infectious diseases, and cancers.

[Continued on next page]

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MONOCLONAL ANTIBODY AGAINST HUMAN MAC-1 AND USES THEREOF

BACKGROUND OF INVENTION

[0001] Macrophage-1 antigen (Mac-1, integrin αMβ2) is mainly expressed on the surface of innate immune cells (including monocytes, neutrophils, NK cells, etc.). Mac-1 is a heterodimeric glycoprotein comprising non-covalently linked integrin αM (CD11b, CR3A, ITGAM) and integrin β2 (CD18, ITGB2). CD11b is a transmembrane protein with a large extracellular domain and a short cytoplasmic tail. Its extracellular domain comprises an I domain, a β-propeller domain, a thigh domain, a calf-1 domain, and a calf-2 domain. The I domain of CD11b has around 179 amino acids inserting into the β-propeller domain. This I domain is responsible for binding to promiscuous ligands (e.g., iC3b, fibrinogen, ICAM-1, CD40L, etc.) and participates in cell adhesion, migration, chemotaxis, and phagocytosis, and regulates inflammatory responses of innate immune cells.

[0002] Like other integrins, Mac-1 exists in distinct conformations with different ligand binding affinities. As shown in FIG 1, CD11b and CD18 are bent in a V shape with the I-domain close to the membrane to form an inactive Mac-1 (low affinity). Inside-out signaling changes the Mac-1 to an open conformation, extending the I domain away from the membrane for optimal ligand binding. One epitope located on the I-EGF2 of CD18 is hidden in the bent conformation (inactive or closed state); this epitope becomes exposed and can be recognized by a monoclonal antibody (KIM127) in the extended or open state (J. Immunol. 2001; 166: 5629-5637). This conformational change also results in the rearrangement of the I domain site such that it becomes a high affinity site for ligand binding and forms an epitope for mAb m24 binding (Proc. Natl. Acad. Sci. USA. 2004; 101: 2333-2338). Such conformational changes accompanying ligand binding affinity changes are tied to Mac-1 functions.

SUMMARY OF THE INVENTION

[0003] Embodiments of the invention relate to antibodies that can bind specifically to Mac-1 and modulate immune cell functions. These antibodies may be used to treat various Mac-1 associated diseases or conditions, such as infectious diseases or cancers.

[0004] One aspect of the invention relates to antibodies against human Mac-1. An antibody against human Mac-1 in accordance with one embodiment of the invention comprises a light-chain variable region sequence and a heavy-chain variable region sequence selected from SEQ ID NO:1 through SEQ ID NO:158 shown in Table I.

[0005] One aspect of the invention relates to methods for treating a disorder associate with Mac-1. A method in accordance with one embodiment of the invention comprises administering to a subject in need thereof an effective amount of an antibody of the invention. The disorder is an acute or chronic inflammation. The disorder may be an infection or a cancer.

[0006] Other aspects of the invention would become apparent from the following description and the associated drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 shows the two conformations of Mac-1 and their epitopes for activation-sensitive mAbs.

[0008] FIG. 2 shows results of characterization of HEK293/Mac-1 using various antibodies. HEK293 cells were incubated in PBS (Mock) or PBS/$MnCl_2$ (Mn^{2+}). Bindings of isotype control IgG, a CD11b specific mAb (clone ICRF44), a CD18 specific mAb (clone 6.7), or β2 activation-dependent mAbs (KIM127 and m24) were detected using flow cytometry.

[0009] FIG. 3A shows that representative anti-Mac-1 antibodies of the invention (DF3M-5, H4L2, m2396, 24G05, and 28E07-HH) predominantly bind to myeloid immune cells (monocytes and neutrophils). Other antibodies of the invention show similar properties.

[0010] FIG. 3B shows that clones m2396, DF3M-5, and 24G05 bind to mouse Mac-1 expressing cell line Raw264.7.

[0011] FIG. 4 shows examples of anti-Mac-1 antibodies that can modulate conformational changes of Mac-1 under PBS (Mock) or PBS/$MnCl_2$ (Mn^{2+}) conditions.

[0012] FIG. 5 shows that anti-Mac-1 antibody treatments can modulate TLR4 agonist-induced Th1/Th2 cytokines responses in mice *in vivo*. Data are shown as the means ± SEM (4 mice per group).

[0013] FIG. 6 shows that anti-Mac-1 antibodies reduce tumor growths in A549 human lung tumor bearing humanized NOG-EXL mouse model *in vivo*. Data are shown as the means ± SEM (10 mice per group).

[0014] FIG. 7A shows that anti-Mac-1 antibody enhanced the expression of functional markers in myeloid cells isolated from HIV patients.

[0015] FIG. 7B shows that anti-Mac-1 antibody reduced the virus load in PBMCs from HIV patients.

DETAILED DESCRIPTION

[0016] Embodiments of the invention relate to antibodies that can bind specifically to Mac-1 and modulate immune cell functions. These antibodies may be used to treat various Mac-1 associated diseases or conditions, such as infectious diseases or cancers.

[0017] Human antibody and mouse antibody phage display libraries were constructed and screened to isolate clones carrying specific antibody genes that can recognize Mac-1. These anti-Mac-1 antibodies are shown to bind Mac-1 on the HEK293/Mac-1 cells and innate immune cells. These antibodies can selectively bind to different states of Mac-1 (bent or extended/open conformation) and modulate the conformational changes of Mac-1. These anti-Mac-1 antibodies are shown to modulate TLR-induced cytokine productions and therefore can be used to treat acute and chronic inflammatory disorders, such as infectious diseases (ref: WO 2020/033929 A1) and cancers (ref: WO 2019/177669 A1 and WO 2016/197974 A1).

[0018] The following describes specific examples of various aspects of the invention. One skilled in the art would appreciate that these specific examples are for illustration only and that other modifications and variations are possible without departing from the scope of the invention.

Material and method

Reagents and antibodies

[0019] The antibodies and reagents used for flow cytometry are KIM127 (hybridoma from ATCC), m24-PE (BioLegend), anti-CD11b-APC (clone ICRF44, BioLegend), anti-CD18-APC (clone 6.7, BD), BSA (BioShop), Rat IgG1κ-APC (BioLegend), and Rat IgG1κ-PE (BioLegend). The KIM127 antibody and BSA were conjugated with CF647, i.e., labeled with CF647 labeling kit (CF Dye & Biotin SE Protein Labeling Kits, Biotium).

Cell culture and stable transfection

[0020] Stable transfection of human integrin Mac-1 in HEK293 cells (BCRC) was performed using jetPRIME® (PolyPlus) transfection protocols. Briefly, HEK293 cells were cultured in Dulbecco's Modified Eagle's Medium (DMEM, Corning), supplemented with 10% heat-inactivated fetal bovine serum (Gibco) and 50 IU/mL penicillin and streptomycin (Corning) at 37 °C. The cells were seeded at 8 x 10^5 cells/well on a 6-well plate (Coster). Next day, a mixture of the jetPRIME® reagent and 2 μg pcDNA3.1/human CD18 expression plasmid carrying a hygromycin-resistance gene was added to the cells, and the cells were cultured for 24 hr. The selection antibiotic, hygromycin B (InvivoGen), was added at a concentration of 200 μg/ml, and half of the culture media containing the antibiotic were changed every 2 to 3 days. After 3 weeks,

the CD18-expression cells were collected using the Cell Sorter (SH800Z, SONY) to pick up CD18-high expression cells and seeded at single cell/well and 5000 cells/well on a 24-well plate (Coster) and a 6-well plate. Cells were maintained in DMEM medium with 10% heat-inactivated fetal bovine serum, 50 IU/mL penicillin and streptomycin, and 200 μg/ml Hygromycin B at 37 °C. After the cells were enriched, human CD18 expression was analyzed with anti-human CD18-APC (clone 6.7, BD) antibody by flow cytometry. The permanent HEK293/human CD18 cells (clone 2B4) were seeded at 6 x 10^5 cells/well on a 6-well plate. The transfection protocol for human CD11b was the same as above. Briefly, 2 μg pcDNA3.1/human CD11b plasmid was mixed with jetPRIME® reagent and added to cells. Next days, the selection antibiotics, 1 mg/ml G418 (InvivoGen) and 200 μg/ml Hygromycin B, were added, and the medium containing selection antibiotics was changed every 2 to 3 days. The Mac-1 expression was measured with anti-human CD11b-APC (clone ICRF44, BioLegend) and anti-hCD18-APC by flow cytometry. The stable clone 1-4 was picked up.

Flow cytometry

[0021] The HEK293/Mac-1 cells (clone1-4) were counted and washed twice with staining buffer (PBS containing 1% FBS, and 0.1% sodium azide). Cells were adjusted at a concentration of 1x10^5 cells/ml in staining buffer and treated with/without 0.25 mM $MnCl_2$ (Sigma). Cells were treated with anti-Mac-1 antibodies and fluorescent conjugated anti-human IgG4 antibodies and incubated for 15 mins. After washing with the staining buffer, the cells were analyzed by flow cytometry. In some examples, these cells were treated with the antibodies (ICRF44, KIM127, m24, or isotype control) in the presence or absence 10μg/ml anti-Mac-1 antibodies. The cells were then incubated at 37 °C for 30 min. After washing with the staining buffer, the cells were analyzed by flow cytometry.

Cytokine measurement

[0022] Balb/c mice (n=4/group) were intraperitoneally injected with 5 mg/kg LPS and 10 mg/kg anti-Mac-1 antibodies for 4 hours. Murine Th1 and Th2 cytokines in the serum were detected by ProcartaPlex MS (Thermo Fisher Scientific) according to the manufacturer instructions.

Protocol of cancer treatment

[0023] Human umbilical cord blood derived CD34+ cells were transplanted into NOG-EXL mice via the tail vein. About 10 weeks after transplantation, peripheral blood were collected from the humanized NOG-EXL animals under anesthesia and used for FACS analysis. The types, proportions, fluorescence intensities, and absolute counts of immune cells (T cells, B cells,

dendritic cells, and monocyte cells) were analyzed. When the average $hCD45^+$% > 15%, $hCD3^+$ of $hCD45^+$% > 3%, and $hCD14^+$ of $hCD45^+$% > 5%, the humanized NOG-EXL animals were used for the anti-cancer study.

[0024] Human lung cancer A549 cells were cultured in a 37 °C incubator containing 5% CO_2 with 10% FBS in F-12K medium. The cells were sub-cultured within 10 passages before being inoculated into mice. A549 cells ($5x10^6$ cells) were mixed with Matrigel (v/v 1:1) in a volume of 200 µl immediately before injection subcutaneously. Before inoculation, mice were anesthetized with 2-5% isoflurane.

[0025] When tumor volumes reached 20 - 50 mm^3, tumor-bearing animals were grouped into 3 groups based on the frequency of macrophage in human $CD45^+$ cells, the frequency of $CD3^+$ cell in human $CD45^+$ cells, and tumor volumes, each group contains 10 mice. The day of grouping was denoted as day 0. Mice were treated on day 0.

[0026] Tumor volume: The tumor volume was calculated as follows: V = (length x $width^2$) / 2. Tumor volume was measured and recorded twice a week during inoculation, grouping, and during the dose period. Tumor growth inhibition (TGI) was calculated as follows: TGI= (1-(T/C))×100%; T and C as the mean tumor volumes of the treatment and control groups, respectively, on the measurement day.

Protocol of infectious disease treatment

PBMC isolation from HIV patients

[0027] Fifteen HIV-1 infected patients receiving regular highly active antiretroviral therapy (ART) treatments with undetectable plasma viral load (<50 HIV-1 RNA copies/ml) and countable CD4 cells (count > 200/mm^3) were recruited at National Taiwan University Hospital (Taipei, Taiwan). The clinical and laboratory data were collected and acquired from medical records. Each blood sample was processed within 24 hours after collection, and leukocytes were isolated for further examination. This study was approved by the Institutional Review Board of National Taiwan University Hospital (Taipei, Taiwan), and written informed consents were obtained from each participant.

[0028] Peripheral blood mononuclear cells (PBMC) were isolated from whole blood samples by means of Ficoll-Paque (Amersham Biosciences, Sweden) gradient centrifugation. Cells were cultured in 96-well U-bottom culture plates ($2x10^5$ cells/well) and resuspended in RPMI-1640 medium with 10% fetal bovine serum (FBS), 100 nM elvitegravir (Cayman), and 100 nM

efavirenz (Cayman) in the presence of human IgG4 antibody (BioLegend) or anti-Mac-1 antibody (clone H4L2) 10 μg/ml for 3 days.

Functional marker detection of PBMCs of HIV patients

[0029] Cell suspensions were incubated with Fc blocker (BD Bioscience) in PBS containing 1% FBS and 0.1% sodium azide before staining with fluorochrome-labeled antibodies. Antibodies against CD11b (clone ICRF44, BioLegend), CD86 (clone 2331, BioLegend), HLA-DR (clone L243, BioLegend), and CD80 (clone L307, BD) were used for marker staining. FVS786 viability staining was used to exclude dead cells from analysis. The mean fluorescence intensity of stained cells was measured by CytoFlex flow cytometry and analyzed by Kaluza software (Beckman Coulter).

Intracellular HIV virus detection- 2 long-terminal repeat (LTR)- DNA circles quantitation

[0030] DNA of 3 day-cultured PBMC ($3x10^6$ cells/well in a 24-well culture plate) treated with/without PMA (100ng/ml) and ionomycin (1μg/ml) in the presence of human IgG4 antibody (BioLegend) or Anti-Mac-1 antibody (H4L2, 10 μg/ml) was extracted with QIAamp DNA Blood Mini Kit (Qiagen, MD, USA) and DNA were eluted by 50μl nuclease-free water. Digital PCR was performed with the QX100™ Droplet Digital™ PCR platform (Bio-Rad, Hercules, California). The ddPCR mix was made by adding 1-5 μl of sample to 10 μl 2x ddPCR™ supermix for probes (Bio-Rad), 1μl EcoR, 500 nM of primers, and 250 nM of probe in a final volume of 20 μl. The mix was placed in an 8-channel cartridge, 70 μl of droplet generating oil (Bio-Rad) was added and droplets were generated in the QX100™ droplet generator (Bio-Rad). Droplet in oil suspensions were transferred to an ddPCR 96-well plate (Bio-Rad) and PCR was performed in the T100™ Thermal Cycler (Bio-Rad). DdPCR amplification reactions consisted of an initial denaturation at 95°C for 10 min, followed by 40 cycles of 95°C for 15 sec denaturation and 60°C for 60 sec annealing/elongation temperature, and enzyme deactivation at 98°C for 10 min. The ramping rate of each step is 2°C/sec. The sequences of primer pairs are listed in Table VI.

Statistical analysis

[0031] Results were compared by Fisher's exact test for categorical variables and paired t test or unpaired t test for continuous variables as appropriate. Data are reported as the mean ± SEM. Statistical analysis was performed using Prism 9.0 software. Two-sided tests were used, and a p-value of < 0.05 was considered statistically significant.

Results

Expression of heterodimeric CD11b/CD18 (Mac-1) on HEK293 cell surface

[0032] HEK293 cells, which do not express endogenous Mac-1, were transfected with pcDNA3.1/human CD11b and pcDNA3.1/human CD18 plasmids using liposome transfections. After G418 and hygromycin selections, we obtained several single-cell clones stably expressing the human Mac-1 on the cell surface by FACS sorting using CD18-specific mAb (clone 6.7) and CD11b specific mAb (clone ICRF44). One clone, designated 1-4, was selected for all the examples presented in this description. Other clones show similar properties.

[0033] The expressions of CD11b and CD18 on the HEK293 cells, as detected by flow cytometry, are shown in FIG 2. We verified the conformational state on the surface of HEK293/Mac-1 cells using two activation-sensitive antibodies, mAbs, KIM127 and m24. KIM127 can fully bind to HEK293/Mac-1, suggesting that Mac-1 is in the extended conformation. Little binding of m24 to HEK293/Mac-1 cells were observed in PBS (Mock), suggesting that Mac-1 is in the low affinity state. The HEK293/Mac-1 in the PBS is partially activated. In contrast, Mn^{2+} treatment induced 100% of Mac-1 molecule to adopt an extended, high-affinity conformation. Thus, these cells provide an excellent platform for the screening of monoclonal antibodies of human Mac-1.

Anti-Mac-1 antibodies selectively bind to the different states of Mac-1 on HEK293/Mac-1 cell surface

[0034] We constructed human antibody and mouse antibody phage display libraries and then screened and isolated clones carrying specific antibody genes that can recognize Mac-1. A total of 79 clones were picked from the phage pools from each round of selection. The amino acid sequences of the variable regions of these clones are listed in Table I and Table VII. To verify that these clones can bind to Mac-1 in its native conformation, we generated recombinant antibodies from these clones with human IgG4 backbone. The recombinant anti-Mac-1 antibodies were used in flow cytometric analysis of HEK293/Mac-1 cells. As listed in Table II, these antibodies can indeed recognize Mac-1 on the surface of HEK293/Mac-1 cells.

[0035] Conformational change of Mac-1 is involved in the regulation of its functions. We examine whether these antibodies can recognize different conformations of Mac-1. As listed in Table II, some clones selectively bind to an activation-specific epitope on Mac-1 molecules on HEK293/Mac-1 cells after stimulation with Mn^{2+} (Mock/$MnCl_2$ Ratio < 1). In contrast, some clones preferentially recognize the resting form of Mac-1 (Mock/$MnCl_2$ Ratio > 1). The deduced amino-acid sequences of the CDRs and framework regions of selected clones are shown in Table I.

Anti-Mac-1 antibodies predominantly bind to Mac-1 on the innate immune cell surface

[0036] The innate immune cells such as monocytes ($CD14^+$ cells) and neutrophils ($CD66b^+$ cells) are the main cells that express Mac-1 on their cell surface. Some populations of B cells also expressed Mac-1 on their cell surface (Proc Natl Acad Sci U S A. 2008 Apr 1;105(13):5195-200). The specificities of selective anti-Mac-1 antibodies were determined by flow cytometry using human whole blood. As shown in FIG. 3A, anti-Mac-1 antibodies in this example were able to bind to the innate immune cells ($CD14^+$ and $CD66b^+$ cells) and small populations of B cells ($CD19^+$ cells). In contrast, these antibodies did not bind to T cells ($CD3^+$ lymphocytes). Taken together, these results indicate that anti-Mac-1 antibodies can specifically bind to the Mac-1 epitope on the immune cells. To determine whether an anti-Mac-1 antibody validated for human Mac-1 will cross-react with the mouse Mac-1, we use Raw 264.7 mouse macrophage cell line that expressed mouse Mac-1 on the cell surface. As shown in FIG. 3B, some clones, such as DF3M-5, m2396, and 24G05, can bind to the surface of Raw 264.7, suggesting that these clones can cross react with mouse Mac-1.

Anti-Mac-1 antibodies induce a conformational change in Mac-1

[0037] It is well known that inside-out signaling induces global conformational changes of Mac-1 leading to outside-in signaling. To screen which anti-Mac-1 antibodies would induce conformational changes in Mac-1, we used KIM127 and m24 antibodies, which bind preferentially to Mac-1 in the extended conformation, as reporters to detect conformational changes. As shown in FIG. 4 left panel, incubation of the antibodies with HEK293/Mac-1 cells in PBS buffer (Mock) resulted in basal levels of KIM127 and m24 bindings. In contrast, incubation of the antibodies with HEK293/Mac-1 cells in $MnCl_2$/PBS buffer (Mn^{2+}) induced maximal levels of KIM127 and m24 bindings (FIG.4 right panel). Incubation with DF3M-5 in the Mock condition induced a small increase in KIM127 binding and a large increase in m24 binding (FIG. 4 left panel), indicating that this DF3M-5 clone can serve as an agonist to enhance the conformational change of Mac-1. Other clones that can serve as agonists (based on m24 expression relative IgG4 control >1) are listed in Table III. In contrast, incubation with 28E07 in the Mn^{2+} condition induces a small decrease in KIM127 binding and a large decrease in m24 binding (FIG. 4 right), indicating that this 28E07 clone can serve as an antagonist to reduce the conformational change of Mac-1. Other clones that can serve as antagonists (based on m24 expression relative IgG4 control <1) are listed in Table IV. Results from these studies indicate that antibodies of the invention may be selectively used to control the conformational changes of Mac-1, thereby regulating the functions of Mac-1.

Anti-Mac-1 antibodies modulate Th1/Th2 cytokine secretion by TLR-activated immune cells in vivo.

[0038] Previous studies show that active CD11b integrin engages in crosstalks with the MyD88 and TRIF pathways and modulate TLR signaling in innate immune responses (Nat Immunol. 2010 Aug;11(8):734-42). To examine whether anti-Mac-1 antibodies of the invention can modulate Th1/Th2 cytokine secretions in TLR-activated immune cells *in vivo*, Balb/c mice (n=4/group) were intraperitoneal injected with 5 mg/kg LPS and 10 mg/kg anti-Mac-1 antibodies. Four hours later, serum Th1/Th2 cytokines were measured by ProcartaPlex™ MS. As shown in FIG 5, m2396 and DF3M-5 treatments enhanced TLR4-induced Th1 cytokines (such as IFN-γ, IL-1β, and TNF-α) and slightly enhance TLR4-induced Th2 cytokines (such as IL-5 and IL-13) in the serum. These results suggest that anti-Mac-1 antibody (clones m2396 and DF3M-5) treatment can skew the TLR-induced Th1/Th2 responses. In contrast, 24G05 treatment didn't alter Th1/Th2 cytokine profile.

Anti-Mac-1 antibody treatment reduces tumor growth

[0039] The anti-cancer activities of the anti-Mac-1 antibodies of the invention (e.g., m2396 and 28E07-HH) were further evaluated in the treatment of A549 cancer model in female NOG-EXL humanized mice.

[0040] When the average tumor volumes reached about 41 mm^3, tumor bearing mice were randomized into 3 groups (Human IgG4, m2396, and 28E07-HH) and the treatments were started. The mean tumor sizes of mice reached 172.59 mm^3 in Human IgG4 group, 132.51 mm^3 in m2396 group, and 109.88 mm^3 in 28E07-HH group on Day35 post grouping (FIG. 6). FIG. 6 shows results from representative antibodies m2396 and 28E07-HH. Other antibodies of the invention have similar properties. The tumor growth inhibition (TGI) % of the m2396 group and 28E07-HH group were 23.59%, and 35.93%, respectively. The TGI of the different groups at different time points were shown in Table V. These results indicate that these anti-Mac-1 antibodies can serve as therapeutic antibodies to treat human cancer.

Anti-Mac-1 antibody treatment reduced HIV viral load and reverses immunosuppressed phenotype of PBMC in HIV patients

[0041] To test the efficacy of the anti-Mac-1 antibody-mediated inhibitory actions against HIV, PBMC isolated from fifteen latent HIV-infected patients were treated with anti-Mac-1 antibodies for 3 days *in vitro*. As shown in FIG 7A, the anti-Mac-1 antibody (H4L2 shown as a representative of anti-Mac-1 antibodies) significantly enhanced the expression of CD86 and MHC class II functional markers in myeloid cells of HIV patients. These results indicate that

enhanced T cell activation and dendritic cells (DCs) maturation in HIV patients can be achieved with the anti-Mac-1 antibodies of the present invention. These enhanced immune responses may suggest a potential application for the antibodies of the invention in the treatment of HIV infection.

[0042] While combination antiretroviral therapy (ART) may suppress HIV replication. HIV-1 persists in the infected cells as a stable integrated genome and more labile unintegrated DNA, which includes linear, 1-LTR and 2-LTR circular DNA. 2-LTR circle DNA, although less abundant, is considered a surrogate marker for recent infection events and is currently used as a diagnostic tool. (C. Orlandi *et al.*, "A comparative analysis of unintegrated HIV-1 DNA measurement as a potential biomarker of the cellular reservoir in the blood of patients controlling and non-controlling viral replication," *J. Transl. Med.* **18,** 204 (2020). Doi: 10.1186/s12967-020-02368-y).

[0043] To detect the load of intracellular HIV virus, HIV virus DNA reservoir was quantified using the 2 long-terminal repeat (LTR) DNA circles as the marker. Because these fifteen HIV-1 infected patients were receiving regular highly active antiretroviral therapy (ART) treatments, only 3 of the 15 patients had detectable levels of the HIV DNA by the LTR assay. Nevertheless, declines in the HIV 2LTR DNA levels were observed in these 3 patients' PBMC samples treated with the anti-Mac-1 antibody or with the anti-Mac-1 antibody in combination with phorbol 12-myristate 13-acetate (PMA) and ionomycin (FIG. 7B).

[0044] While the invention has been described with a limited number of examples, one skilled in the art would appreciate that these examples are for illustration only and that other modifications and variations are possible without departing from the scope of the invention. Therefore, the scope of protection should only be limited by the attached claims.

Tables

Table I: Heavy-chain variable region sequences and light-chain variable region sequences of SEQ ID NO:1 through SEQ ID NO:158

Anti-Mac-1 antibody sequence clone: 24F08 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 1	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSYWMSWV RQAPGKGLEWVSIINYSGREADYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARDGSYVGQAHEAFDI WGQGTLVTVSS
SEQ ID NO: 2	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISKYLAWYQQ KPGKAPKLLIYGTSNLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQSRSWPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24F09 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 3	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSAWMSWV RQAPGKGLEWVSTIYWSGSEINYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARSFASGESAMDVWG QGTLVTVSS
SEQ ID NO: 4	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISNYLAWYQQ KPGKAPKLLIYDASNLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQYYSSPPTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24F11 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 5	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTSWMHWV RQAPGKGLEWVSIINSGGGEAYYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARGDAAFDYWGQGTL VTVSS
SEQ ID NO: 6	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQLIRKKLAWYQQ KPGKAPKLLIYAASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCMQSGSPQYTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24F12 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 7	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTNYWMGW VRQAPGKGLEWVSIIISDGGEIIYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARIHAGTGSSADYWGQ GTLVTVSS
SEQ ID NO: 8	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSIYNYLNWYQQ KPGKAPKLLIYDASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQYYSYPWTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24G01 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 9	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFRTFGMNWV RQAPGKGLEWVSGIVPSGSEIDYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARDHSHYTGPFDVWG QGTLVTVSS
SEQ ID NO: 10	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSIYSYLNWYQQ KPGKAPKLLIYGASILQYGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCHQSNSSPGTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24G05 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 11	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTSYWMTWV RQAPGKGLEWVSTIVGGGGEADYADSVKGRFTISRDN SKNTLYLQMNSLRAEDTAVYYCARDYVADNHGAMDY WGQGTLVTVSS
SEQ ID NO: 12	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQGLSSYLNWYQQ KPGKAPKLLIYGMSTLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCMQYYHWPYTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24G07 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence

SEQ ID NO: 13	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDYIMHWV RQAPGKGLEWVSAISPSGSEIYYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARNAWDNNWVREYGM DYWGQGTLVTVSS
SEQ ID NO: 14	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSGNNNLAWYQQ KPGKAPKLLIYGASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCMQSNSYPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24G08 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 15	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDYKIHWVR QAPGKGLEWVSIYADSVKGRFTISRDNSKNTLYLQMNS LRAEDTAVYYCARSSYGEGYAFDYWGQGTLFTVSS
SEQ ID NO: 16	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQDVDSYLNWYQQ KPGKAPKLLIYDAISLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQYYSLPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24G09 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 17	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDYAIGWVR QAPGKGLEWVSTIYWSGSNAYYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARLFTLGYHGFDVWG QGTLVTVSS
SEQ ID NO: 18	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSINTYLNWYQQ KPGKAPKLLIYDASNLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQYDDLPFTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24G10 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 19	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSNSMSWVR QAPGKGLEWVSAINYSGREIYYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARTDYNTFDYWGQGTL

		VTVSS
SEQ ID NO: 20	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSNSSHLNWYQQ KPGKAPKLLIYGVSNLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQHYGSTPYTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24G11 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 21	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDYYMSWV RQAPGKGLEWVSVISYGGGEAYYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARAMASEYGPWDYW GQGTLVTVSS
SEQ ID NO: 22	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISRHLTWYQQK PGKAPKLLIYGASTLQSGVPSRFSGSGSGTDFTLTISSLQ PEDFATYYCQQYHDWPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24G12 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 23	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFGDDYMHWV RQAPGKGLEWVSAINYDGSWKYYADSVKGRFTISRDN SKNTLYLQMNSLRAEDTAVYYCARLSSIDEPPYGPFDV WGQGTLVTVSS
SEQ ID NO: 24	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISTYLAWYQQK PGKAPKLLIYEASSLQSGVPSRFSGSGSGTDFTLTISSLQ PEDFATYYCQQYYNFPPTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24H01 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 25	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFNNYYMSWV RQAPGKGLEWVSIIYYDGSEADYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARNKDIYSVYGMDYW GQGTLVTVSS
SEQ ID	Light chain	DIQMTQSPSSLSASVGDRVTITCRASQSISNYLAWYQQ

NO: 26	variable	KPGKAPKLLIYATSNLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQANNTPPTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24H02 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 27	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDYWMSWV RQAPGKGLEWVSSIVYGGSEIDYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARVPGYSGTPFDYWGQ GTLVTVSS
SEQ ID NO: 28	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSVSRYLAWYQQ KPGKAPKLLIYDTSSLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQSYSFPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 24H03 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 29	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFKDSWMHWV RQAPGKGLEWVSIISYSGGEAIYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARDSGGSAMGFDIWGQ GTLVTVSS
SEQ ID NO: 30	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSIHSYLNWYQQ KPGKAPKLLIYGASSLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQYYRFPYTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 25A02 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 31	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDWYLHWV RQAPGKGLEWVSVINGGGSEIIYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARGGDGDGSGFDDWGQ GTLVTVSS
SEQ ID NO: 32	Light chain variable	DIQMTQSPSSLSARVGDRVTITCRASQSIHSYLNWYQQ KPGKAPKMLIYDASNLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCQQSGNYPFTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 25A04 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 33	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSFTAMHWV RQAPGKGLEWVSAIIYNGSEADYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARANDYDHGCCDNYA MDYWGQGTLVTVSS
SEQ ID NO: 34	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQGIGSYLYWYQQ KPGKAPKLLIYDASNLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCMQHGGWPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 25A06 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 35	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSYYMSWV RQAPGKGLEWVSTINYDGSEKDYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARDRLGNYPWFDVWG QGTLVTVSS
SEQ ID NO: 36	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISNYLAWYQQ KPGKAPKLLIYDANNLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCQQSYSWPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 25A09 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 37	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTEWWMSWV RQAPGKGLEWVSTISYGGSEAIYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARTSSDRLLFDYWGQG TLVTVSS
SEQ ID NO: 38	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSIKSSLAWYQQK PGKAPKLLIYGASTLQSGVPSRFSGSGSGTDFTLTISSLQ PEDFATYYCMQTNRHPWTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 25A10 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence

SEQ ID NO: 39	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSNYNLHWV RQAPGKGLEWVSTISYSGSEIIYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCAREDEYTYYYFDPWGQ GTLVTVSS
SEQ ID NO: 40	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSVSSYLAWYQQ KPGKAPKLLIYDASKLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCKQSYSSPPTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 25B03 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 41	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDYWMHWV RQAPGKGLEWVSTIIGGGSEAGYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARDRSYGYLGFDIWGQ GTLVTVSS
SEQ ID NO: 42	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSIRNSLHWYQQ KPGKAPKLLIYSAGKLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQSNSFPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 25B04 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 43	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTNWMHWV RQAPGKGLEWVSMISYSGGEAIYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARNWLPYAMDYWGQ GTLVTVSS
SEQ ID NO: 44	Light chain variable	DIQMTQSPGSLSASVGDRVTITCRASQSIRSYLSWYQQ KPGKAPKLLIYSASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQSYSTPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 25B01 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 45	Heavy chain variable	AVQLVESGGGLVQPGGSLRLSCAASGFTFSSYDVGWV RQAPGKGLEWVSGIVPSGGNIYYADSVKGRFTISRDNS

		KNTLYLQMNSLRAEDTAVYYCARHRSYAYYAFDYWG QGTLVTVSS
SEQ ID NO: 46	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQNVRNYLGWYQ QKPGKAPKLLIYDASSLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCQQYGDWPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3-10 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 47	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTDAYMSWV RQAPGKGLEWVSTISSYGSSTYYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARPRYIESPVYDYWGQ GTLVTVSS
SEQ ID NO: 48	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSIAKYLAWYQQ KPGKAPKLLIYETSNLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQSSSSPETFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3-28 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 49	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTNYWMHW VRQAPGKGLEWVSTIIYDGGETGYADSVKGRFTISRDN SKNTLYLQMNSLRAEDTAVYYCARNSRKSGMDYWGQ GTLVTVSS
SEQ ID NO: 50	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSIYKYLNWYQQ KPGKAPKLLIYDASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCMQYYSDPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3-30 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 51	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSGYAWSWV RQAPGKGLEWVSMISPAGGSTYYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARDRNAGGDSYYSFD VWGQGTLVTVSS

SEQ ID NO: 52	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSINSHLAWYQQ KPGKAPKLLIYAAINLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQTNHYPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3-32 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 53	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSHAMHWV RQAPGKGLEWVSSILSGGSETNYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARDTYEVTGNLLDYW GQGTLVTVSS
SEQ ID NO: 54	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSVWSYLNWYQ QKPGKAPKLLIYGASSLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCMQSYSWPFTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4-16 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 55	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFNEYAMSWV RQAPGKGLEWVSSIIPDGSETDYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARSLSSSGMHGDIWGQG TLVTVSS
SEQ ID NO: 56	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSINNYLNWYQQ KPGKAPKLLIYKASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCHQYHSPYTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4-17 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 57	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDYGWHW VRQAPGKGLEWVSIIESDGSGTYYADSVKGRFTISRDN SKNTLYLQMNSLRAEDTAVYYCARNGEVGERGVRDY DYAMDYWGQGTLVTVSS
SEQ ID NO: 58	Light chain variable	DIQMTQSPRSLSASVGDRVTITCRASQSINRYLNWYQQ KPGKAPKLLIYATSSLQSGVPSRFSGSGSGTDFTLTISSL

		QPEDFATYYCQQYGSTPITFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4-22 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 59	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTDYNVHW VRQAPGKGLEWVSGINSSGSETNYADSVKGRFTISRD NSKNTLYLQMNSLRAEDTAVYYCARDSVFKTVGGYD AVMDYWGQGTLVTVSS
SEQ ID NO: 60	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSIYNYLAWYQQ KPGKAPKLLIYGTSTLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCMQSYSSPTTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4-25 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 61	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFKDYWLSW VRQAPGKGLEWVSIINYGGSETYYADSVKGRFTISRD NSKNTLYLQMNSLRAEDTAVYYCARTQTSYVMDYW GQGTLVTVSS
SEQ ID NO: 62	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSVRSGLNWYQ QKPGKAPKLLIYAASSLQSGVPRRFSGSGSGTDFTLTIS SLQPEDFATYYCMQSHSWPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4-26 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 63	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSGYMSWV RQAPGKGLEWVSTISGSGRETNYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARDAWGGDSYFDPW GQGTLVTVSS
SEQ ID NO: 64	Light chain variable	DIQMTQSPGSLSASVGDRVTITCRASQSIWSNLSWYQ QKPGKAPKLLIYNASSLQSGVPSRFSGSGSGTDFTLTIS SLQPEDFATYYCQQYHGTPITFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4-42 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 65	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTDYQMSW VRQAPGKGLEWVSTIIWSGSETNYADSVKGRFTISRD NSKNTLYLQMNSLRAEDTAVYYCARNKTPFDYWGQG TLVTVSS
SEQ ID NO: 66	Light chain variable	DIQMTQSPRSLSASVGDRVTITCRASQSIRTHLAWYQQ KPGKAPKLLIYDNSNLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCQQYKGSPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3M-1 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 67	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTSYAMSWV RQAPGKGLEWVSSISYSGGETDYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARSKGGLYFDYWGQG TLVTVSS
SEQ ID NO: 68	Light chain variable	DIQMTQSPGSLSASVGDRVTITCRASQSISSYLAWYQQ KPGKAPKLLIYGASSLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCQQYGSTPETFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3M-2 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 69	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSGYWIHWV RQAPGKGLEWVSTISYSGDEAYYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARSPSDGDYGFDYWG QGTLVTVSS
SEQ ID NO: 70	Light chain variable	DIQMTQSPSSLSASVGDRVNITCRASQSINNYLSWYQQ KPGKAPKLLIYDGRILQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCMQYLAYPWTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3M-5 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID	Heavy chain	EVQLVESGGGLVQPGGSLRLSCAASGFTFGTYDMHWV

NO: 71	variable	RQAPGKGLEWVSMISPSGGDTYYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARDSSGDWYAMAYWG QGTLVTVSS
SEQ ID NO: 72	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSIRRYLAWYQQ KPGKAPKLLIYGASNLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQHSSDTPLTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3M-18 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 73	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDSAMGWV RQAPGKGLEWVSIISYYGSETYYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARNPDGDLSALDYWG QGTLVTVSS
SEQ ID NO: 74	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQPISSYLNWYQQK PGKAPKLLIYGASSLQSGVPSRFSGSGSGTDFTLTISSLQ PEDFATYYCQQRLRSPFTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3M-19 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 75	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTSYAMSWV RQAPGKGLEWVSSINSGGSETNYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARGEYYTDVWPSGFDI WGQGTLVTVSS
SEQ ID NO: 76	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISNPLNWYQQK PGKAPKLLIYDASTLQSGVPSRFSGSGSGTDFTLTISSLQ PEDFATYYCQQYGSSPSTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3M-30 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 77	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSNYEMGWV RQAPGKGLEWVSIISWSGSETIYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARNGRGDYAFDFWGQG

		TLVTVSS
SEQ ID NO: 78	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSVSNNLAWYQQ KPGKAPKLLIYRTTSLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCMQYGSLPSTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3M-36 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 79	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDYGMSWV RQAPGKGLEWVSIISPGGRETYYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARSPDGGYYEFDVWG QGTLVTVSS
SEQ ID NO: 80	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISNYLAWYQQ KPGKAPKLLIYDASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCHQRNSWPPTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF3M-42 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 81	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSYHMHWV RQAPGKGLEWVSAIDSSGRETFYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARGYGDYFDYWGQGT LVTVSS
SEQ ID NO: 82	Light chain variable	DIQMTQSPGSLSASVGDRVTITCRASQSGSNYLAWYQQ KPGKAPKLLIYAASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQSGSTPYTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-1 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 83	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFDNYVMGWV RQAPGKGLEWVSMINYGGSETIYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARSACDYCDFDYWGQ GTLVTVSS
SEQ ID	Light chain	DIQMTQSPSSLSASVGDRVTITCRASQVVGSYLNWYQQ

NO: 84	variable	KPGKAPKLLIYGASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQYYNYPGTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-3 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 85	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTTYYMSWV RQAPGKGLEWVSTIIPSGSETNYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARVPAASEGPMDYWGQ GTLVTVSS
SEQ ID NO: 86	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISRNLAWYQQ KPGKAPKLLIYDASSLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQYYHSPPTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-7-1 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 87	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFDSYAMHWV RQAPGKGLEWVSSIDGSGRETDYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARDGSEGYAFDPWGQ GTLVTVSS
SEQ ID NO: 88	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQIIRHKLNWYQQ KPGKAPKLLIYDASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQYNSWPITFGQGAKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-7-4 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 89	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTSYIMSWVR QAPGKGLEWVSIISYSGGETYYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARNGINDDSFDYWGQG TLVTVSS
SEQ ID NO: 90	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISNYLNWYQQ KPGKAPKLLIYGASSLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQRLHWPGTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-9 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 91	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTNHWMSW VRQAPGKGLEWVSTIEGSGSETIYADSVKGRFTISRDN SKNTLYLQMNSLRAEDTAVYYCARSSRTLFDYWGQG TLVTVSS
SEQ ID NO: 92	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQGVYSYLAWYQ QKPGKAPKLLIYDASSLQSGVPSRFSGSGSGTDFTLTIS SLQPEDFATYYCQQYYHYPPTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-11 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 93	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSNYYMDW VRQAPGKGLEWVSSINPWGGNKYYADSVKGRFTISR DNSKNTLYLQMNSLRAEDTAVYYCARTITSKYEDYAM DYWGQGTLVTVSS
SEQ ID NO: 94	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISSYLAWYQQ KPGKAPKLLIYLTSNLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCQQTAQNPFTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-17 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 95	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSDYWVAWV RQAPGKGLEWVSTISYSGSETEYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARYGGSDYYGFDPWG QGTLVTVSS
SEQ ID NO: 96	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISNNLAWYQQ KPGKAPKLLIYATTTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCMQSNTPWTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-18 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence

SEQ ID NO: 97	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSYAISWVR QAPGKGLEWVSAISSGGSETDYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARGESGYYMAEDVWGQ GTLVTVSS
SEQ ID NO: 98	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSVSSFLAWYQQ KPGKAPKLLIYAASKLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQYSVTPITFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-21 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 99	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFSSYAMSWVR QAPGKGLEWVSAISSYGGETDYADSVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYYCARGDAYSSFVDNPFDIW GQGTLVTVSS
SEQ ID NO: 100	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISNYLAWYQQ KPGKAPKLLIYDASTLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCMQYESTPWTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-23 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 101	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTSYAMSWV RQAPGKGLEWVSAISPSGSETEYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARGFYNDYIFDLWGQG TLVTVSS
SEQ ID NO: 102	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISSYLNWYQQK PGKAPKLLIYAASSLQSGVPSRFSGSGSGTDFTLTISSLQ PEDFATYYCQQYLSTPYTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-30 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 103	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFRNNAMHW VRQAPGKGLEWVSVINSGGSETYYADSVKGRFTISRD

		NSKNTLYLQMNSLRAEDTAVYYCARDEPSDEYGMYG FDYWGQGTLVTVSS
SEQ ID NO: 104	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISSYLNWYQQ KPGKAPKLLIYKASNLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCVQYSRSPTTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-31 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 105	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTSATMSWV RQAPGKGLEWVSIISPGGSETYYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARGGDYPSYYMDPW GQGTLVTVSS
SEQ ID NO: 106	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQSISNYLAWYQQ KPGKAPKLLIYGTSSLQSGVPSRFSGSGSGTDFTLTISS LQPEDFATYYCQQGHQWPWTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: DF4M-45 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 107	Heavy chain variable	EVQLVESGGGLVQPGGSLRLSCAASGFTFTSYYMSWV RQAPGKGLEWVSTIISDGSETGYADSVKGRFTISRDNS KNTLYLQMNSLRAEDTAVYYCARTNRYGFQFDYWGQ GTLVTVSS
SEQ ID NO: 108	Light chain variable	DIQMTQSPSSLSASVGDRVTITCRASQGARNGLHWYQ QKPGKAPKLLIYDASTLQSGVPSRFSGSGSGTDFTLTIS SLQPEDFATYYCQQRYSYPPTFGQGTKVEIK

Anti-Mac-1 antibody sequence clone: 28E07 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 109	Heavy chain variable	QVQLQQSGPELVKPGASVKISCKASGYSFTDYNMNW VKQSNGKSLEWIGEINPGYGTSRYNQKFKDKATLTVD QSSTTAYMQLNSLTSEDSAVYYCARADVDYGDVMDY WGQGTTVTVSS

SEQ ID NO: 110	Light chain variable	DIELTQSPAIMSASPGEKVTMTCSASSSVSYMHWYQQ KSGTSPKRWIYDTSKLASGVPTRFSGSGSGTSYSLTISS MEAEDAATYYCQQWSSNPPTFGAGTKLELK

Anti-Mac-1 antibody sequence clone: 28A12 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 111	Heavy chain variable	QVKLQESGPELVKPGASVKISCKASGYSFTDYNMNW VKQSNGKSLEWIGEINPGYGTSRYNQKFKDKATLTVD QSSSTAYMQLNSLTSEDSAVYYCARADVDYGDTMDY WGQGTTVTVSS
SEQ ID NO: 112	Light chain variable	DIELTQSPAIMSASPGEKVTMTCSASSSVSDMHWYQQ KSGNSPKRWIYDTSKLASGVPVRFSGSGSGTSYSLTISS MEAEDAATYYCQQWSSNPPTFGAGTKLELK

Anti-Mac-1 antibody sequence clone: 27G04 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 113	Heavy chain variable	QVKLQESGPELVKPGASVKISCKASGYSFTDYNMNW VKQSNGKSLEWIGVINPNYGTTSYNQKFKGKATLTVD QSSSTAYMQLNSLTSEDSAVYYCARTFDYDDDAFAYW GQGTTVTVSS
SEQ ID NO: 114	Light chain variable	DIELTQSPAIMSASPGEKVTITCSASSSVSDMHWYQQK SGTSPKRWIYDTSKLASGVPARFSGSGSGTSYSLTISN MEAEDAATYYCQQWSSNPPTFGAGTKLELK

Anti-Mac-1 antibody sequence clone: 27A04 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 115	Heavy chain variable	QVKLQQSGPELVKPGASVKISCKASGYSFTDYNMNW VKQSNGKSLEWIGVINPNYGTTSYNQKFKGKATLTVD QSSSTAYMQLNSLTSEDSAVYYCARTYDYDGDAFAYW GQGTTVTVSS
SEQ ID NO: 116	Light chain variable	DIELTQSPAIMSASPGEKVTMTCSASSSVSYMHWYQQ KSGTSPKRWIYDTSKLASGVPARFSGSGSGTSYSLTISS

		MEAEDAATYYCQQWSSNPPTFGAGTKLELK

Anti-Mac-1 antibody sequence clone: 27A06 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 117	Heavy chain variable	QVKLQQSGPELVTPGASVKISCKPSGYSFTDYNMNWV KQSNGKSLEWIGEINPNYGTTRHNQKFKGKASLTVDQ SSSTAYMQLISLTSEDSAVYYCARTYDYDEDAFAYWG QGTTVTVSS
SEQ ID NO: 118	Light chain variable	DIELTQSPAIMSASPGEKVTMTCSASSSVSYMHWYQQ KSDTSPKRWIYDTSKLASGVPARFSGSGSGTSYSLTISS MEAEDAATYYCQQWSSNPPTFGAGTKLELK

Anti-Mac-1 antibody sequence clone: 28G06 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 119	Heavy chain variable	QVKLQQSGPELVKPGASVKISCKASGYSFTDYNMNW VKQSNGKSLEWIGIINPNYGTTSYNQKFKGKATLTVD QSSSTAYMQLNSLTSEDSAVYYCARGYDYDESGFAYW GQGTTVTVSS
SEQ ID NO: 120	Light chain variable	DIELTQSPAIMSASPGEKVTMTCSASSSVSYMYWYQQ KPGSSPRLLIYDTSNLASGVPVRFSGSGSGTSYSLTISR MEAEDAATYYCQQWSSNPPTFGGGTKLEIK

Anti-Mac-1 antibody sequence clone: 27B10 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 121	Heavy chain variable	QVQLQQSGPELVKPGASVKISCKTSGYSFTDYNMNW VKQSNGKSLEWIGRINPNFGTTTYNQKFKGKATLTVD QSSSTAYMQLNSLTSEDSAVYYCARGYDYDESGFAYW GQGTTVTVSS
SEQ ID NO: 122	Light chain variable	DIELTQSPAIMSASPGEKVTMTCSASSSVSYMYWYQQ KPGSSPRLLIYDTSNLASGVPVRFSGSGSGTSYSLTISR MEAEDAATYYCQQWSSYPPTFGGGTKLEIK

Anti-Mac-1 antibody sequence clone: 27D06 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 123	Heavy chain variable	QVKLQESGAEVVKPGASVKISCKASGYSFTDYNMNW VKQSNGKSLEWIGVINPNYGTTSYNQKFKGKATLTVD QSSSTAYMQLNSLTSEDSAVYYCARTYDYDGDAFAYW GQGTTVTVSS
SEQ ID NO: 124	Light chain variable	DIELTQSPALMSASPGEKVTMTCRASSSVSSNNLHWYQ QKSGASPKLWIYSTSNLATGAPARFSGSGSGTSYSLTISS MEAEDAATYYCQQWNSNPPTFGGGTKLEIK

Anti-Mac-1 antibody sequence clone: 28D06 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 125	Heavy chain variable	QVKLQQSGPELVKPGASVKISCKASGYSFTDYNMNWV KQSNGKSLEWIGEINPNYGTTRYNQKFKGKATLTVDQS SSTAYMQLNSLTSEDSAVYYCARPSIYYDYDDAMDYW GQGTTVTVSS
SEQ ID NO: 126	Light chain variable	DIELTQSPAIMSASPGEKVTMTCSASSSVNYMYWYQQ KPGSSPRLLIYDTSNLASGVPVRFSGSGSGTSYSLTISRM EAEDAATYYCQQWITYPPTLTFGAGTKLEIK

Anti-Mac-1 antibody sequence clone: 27E12 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 127	Heavy chain variable	QVQLQQSGTVLARPGASVKMSCKASGYTFTSYWMH WVKQRPGQGLEWIGAIYPGNSDTSYNQKFKGKAKLTA VTSASTAYMELSSLTNEDSAVYYCTRGGGSYEFAYWG QGTTVTVSS
SEQ ID NO: 128	Light chain variable	DIELTQSPAIMSASPGEKVTMTCSVSSSVSYMYWYQQK PGSSPRLLIYDTSNLASGVPARFSGSGSGTSYSLTISSME AEDAATYYCQQWSSNPFTFGSGTKLEIK

Anti-Mac-1 antibody sequence clone: m2396 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID	Heavy chain	QVQLQESGPGLVKPSETLSLTCTVSGFSLTSNSISWVRQ

NO: 129	variable	PPGKGLEWMGAIWSGGGTDYNPSLKSRLTISRDTSKSQ VFLKMSSLTAADTAIYFCTRGGYPYYFDYWGQGVLVT VSS
SEQ ID NO: 130	Light chain variable	DIVMTQSPDSLAVSLGERVTINCKSSQSLLYSENQENYL AWYQQKPGQSPKLLIYWASTRQSGVPDRFSGSGSGTDF TLTISSVQAEDLAIYYCQQYYDTPLTFGGGTKLEIK

Anti-Mac-1 antibody sequence clone: H4L2 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 131	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYTFTNYWINW VRQAPGQRLEWMGNIYPSDTYINHNQKFKDRVTITRD TSASTAYMELSSLRSEDTAVYYCARSAYANYFDYWGQ GTLVTVSS
SEQ ID NO: 132	Light chain variable	EIVMTQSPATLSVSPGERATLSCRASQNIGTSIHWYQQK PGQAPRLLIYYASESISGIPARFSGSGSGTEFTLTISSLQSE DFAVYYCQQSDSWPTLTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-HH (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 133	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMNW VRQAPGQGLEWMGEINPGYGTSRYNQKFKDRVTMTR DTSISTAYMELSRLRSDDTAVYYCARADVDYGDVMDY WGQGTLVTVSS
SEQ ID NO: 134	Light chain variable	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQKP GQAPRLLIYDTSKLASGIPARFSGSGSGTDFTLTISSLEPE DFAVYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-B1H (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 135	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMNW VRQAPGQGLEWMGEINPGYGTSRYNQKFKDRVTLTVD QSITTAYMELSRLRSDDTAVYYCARADVDYGDVMDY

		WGQGTLVTVSS
SEQ ID NO: 136	Light chain variable	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQKP GQAPRLLIYDTSKLASGIPARFSGSGSGTDFTLTISSLEPE DFAVYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-B2H (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 137	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMNW VRQAPGQGLEWIGEINPGYGTSRYNQKFKDKATLTVD QSITTAYMELSRLRSDDTAVYYCARADVDYGDVMDY WGQGTLVTVSS
SEQ ID NO: 138	Light chain variable	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQKP GQAPRLLIYDTSKLASGIPARFSGSGSGTDFTLTISSLEPE DFAVYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-B3H (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 139	Heavy chain variable	QVQLVQSGAEVKKPGASVKISCKASGYSFTDYNMNW VKQAPGQGLEWIGEINPGYGTSRYNQKFKDKATLTVD QSITTAYMELSRLRSDDTAVYYCARADVDYGDVMDY WGQGTLVTVSS
SEQ ID NO: 140	Light chain variable	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQKP GQAPRLLIYDTSKLASGIPARFSGSGSGTDFTLTISSLEPE DFAVYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-B4H (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 141	Heavy chain variable	QVQLVQSGPEVVKPGASVKISCKASGYSFTDYNMNWV KQANGQSLEWIGEINPGYGTSRYNQKFKDKATLTVDQ SITTAYMELNRLRSDDTAVYYCARADVDYGDVMDYW GQGTLVTVSS
SEQ ID	Light chain	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQKP

NO: 142	variable	GQAPRLLIYDTSKLASGIPARFSGSGSGTDFTLTISSLEPE DFAVYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-HB1 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 143	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMNW VRQAPGQGLEWMGEINPGYGTSRYNQKFKDRVTMTR DTSISTAYMELSRLRSDDTAVYYCARADVDYGDVMDY WGQGTLVTVSS
SEQ ID NO: 144	Light chain variable	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQKP GQAPRRLIYDTSKLASGIPARFSGSGSGTDFTLTISSLEP EDFAVYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-HB2 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 145	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMN WVRQAPGQGLEWMGEINPGYGTSRYNQKFKDRVTM TRDTSISTAYMELSRLRSDDTAVYYCARADVDYGDVM DYWGQGTLVTVSS
SEQ ID NO: 146	Light chain variable	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQK PGQAPRRWIYDTSKLASGIPARFSGSGSGTDYTLTISSL EPEDFAVYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-HB3 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 147	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMNW VRQAPGQGLEWMGEINPGYGTSRYNQKFKDRVTMTR DTSISTAYMELSRLRSDDTAVYYCARADVDYGDVMDY WGQGTLVTVSS
SEQ ID NO: 148	Light chain variable	EIELTQSPATLSASPGERVTMSCSASSSVSYMHWYQQK PGQAPKRWIYDTSKLASGVPARFSGSGSGTDYTLTISSM EPEDFATYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-HB4 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 149	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMNW VRQAPGQGLEWMGEINPGYGTSRYNQKFKDRVTMTR DTSISTAYMELSRLRSDDTAVYYCARADVDYGDVMDY WGQGTLVTVSS
SEQ ID NO: 150	Light chain variable	EIELTQSPATMSASPGERVTMSCSASSSVSYMHWYQQK SGQSPKRWIYDTSKLASGVPARFSGSGSGTDYTLTISSM EPEDFATYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-B1B1 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 151	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMNW VRQAPGQGLEWMGEINPGYGTSRYNQKFKDRVTLTVD QSITTAYMELSRLRSDDTAVYYCARADVDYGDVMDY WGQGTLVTVSS
SEQ ID NO: 152	Light chain variable	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQKP GQAPRRLIYDTSKLASGIPARFSGSGSGTDFTLTISSLEP EDFAVYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-B1B2 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 153	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMNW VRQAPGQGLEWMGEINPGYGTSRYNQKFKDRVTLTVD QSITTAYMELSRLRSDDTAVYYCARADVDYGDVMDY WGQGTLVTVSS
SEQ ID NO: 154	Light chain variable	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQKP GQAPRRWIYDTSKLASGIPARFSGSGSGTDYTLTISSLEP EDFAVYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-B2B1 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence

SEQ ID NO: 155	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMN WVRQAPGQGLEWIGEINPGYGTSRYNQKFKDKATLT VDQSITTAYMELSRLRSDDTAVYYCARADVDYGDVM DYWGQGTLVTVSS
SEQ ID NO: 156	Light chain variable	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQK PGQAPRRLIYDTSKLASGIPARFSGSGSGTDFTLTISSLE PEDFAVYYCQQWSSNPPTFGQGTKLEIK

Anti-Mac-1 antibody sequence clone: 28E07-B2B2 (Underline is a CDR sequence)

SEQ ID NO	Description	Sequence
SEQ ID NO: 157	Heavy chain variable	QVQLVQSGAEVKKPGASVKVSCKASGYSFTDYNMN WVRQAPGQGLEWIGEINPGYGTSRYNQKFKDKATLT VDQSITTAYMELSRLRSDDTAVYYCARADVDYGDVM DYWGQGTLVTVSS
SEQ ID NO: 158	Light chain variable	EIVLTQSPATLSLSPGERATLSCSASSSVSYMHWYQQK PGQAPRRWIYDTSKLASGIPARFSGSGSGTDYTLTISSL EPEDFAVYYCQQWSSNPPTFGQGTKLEIK

Table II: The anti-Mac-1 antibodies selectively bind to different statuses of human Mac-1. HEK293/Mac-1 cells (clone1-4) were incubated in PBS (Mock), or PBS/$MnCl_2$ (Mn^{2+}). Binding of isotype control IgG, the CD11b specific mAb (ICRF44), the CD11b activation-sensing mAb (CBRM1/5), or the screened anti-Mac-1 antibody was detected using flow cytometry.

Clone ID	**Mock MFI**	**Mn^{2+} MFI**	**Mock/ Mn^{2+} Ratio**
DF4M-31	4634.09	13002.09	0.36
24H01	9943.78	23932.79	0.42
25A04	39556.31	65804.75	0.60
DF3M-5	34594.39	52465.64	0.66
DF4-22	24413.75	35186.45	0.69
25A06	28469.57	39371.88	0.72
CBRM1/5	142914.38	181344.86	0.79
24G1	33937.61	41246.16	0.82

27D06	15020.65	16648.00	0.90
27A04	36111.10	39843.69	0.91
H4L2	41612.7	45713.69	0.91
28E07	53399.63	56373.98	0.95
28E07-HH	1030000	1020000	1.01
m2396	107729.80	107187.79	1.01
ICRF44	805181.31	800850.50	1.01
Isotype	940.56	935.35	1.01
27G04	43141.59	41085.59	1.05
24G09	29488.77	26908.73	1.10
27E12	56805.96	50812.85	1.12
DF4-25	35677.02	30475.75	1.17
24F9	39762.61	33933.75	1.17
24F08	50004.22	42113.35	1.19
24G05	55897.95	44758.03	1.25
27A06	64572.24	47964.83	1.35
DF3M-32	35513.05	25778.02	1.38
28A12	55233.79	37255.65	1.48
28D06	51817.07	30600.69	1.69

Table III: The anti-Mac-1 antibodies can serve as agonist to enhance the conformational change of Mac-1. HEK293/Mac-1 cells (clone1-4) were incubated with 10 μg/ml anti-Mac-1 antibodies under the PBS (Mock) condition. Binding of KIM127 or m24 was detected using flow cytometry.

Clone	**KIM127 (Expression relative to IgG4)**	**m24 (Expression relative to IgG4)**
DF3M-5	2.49	28.37
24G05	2.22	24.99
24G1	2.23	24.68
DF4-25	2.23	24.00
DF4M-9	2.17	22.08
24F08	2.17	21.23
24F9	2.05	19.13

DF3M-32	1.93	17.89
25A06	1.92	16.82
DF4-22	1.82	15.66
25A04	1.58	9.33
DF4M-45	1.91	8.63
DF4M-31	1.13	3.77
24H01	1.05	1.92
27D06	0.99	1.20
IgG4	**1**	**1**
27G04	1.11	1.00
m2396	1.09	0.88
28A12	1.02	0.88
27A06	1.04	0.88
28E07-HH	0.90	0.83
27B10	1.04	0.81
27A04	1.05	0.78
24G09	1.01	0.72
M1/70	0.94	0.71
ICRF44	0.94	0.66
28D06	0.99	0.65
27E12	1.00	0.64
28E07	0.98	0.63
28G06	1.16	0.58
H4L2	1.11	0.44

Table IV: The anti-Mac-1 antibody can serve as an antagonist to reduce the conformational change of Mac-1. HEK293/Mac-1 cells (clone1-4) were incubated with 10 μg/ml anti-Mac-1 antibodies under the PBS/$MnCl_2$ (Mn^{2+}) condition. Binding of KIM127 or m24 was detected using flow cytometry.

Clone	**KIM127 (Expression relative to IgG4)**	**m24 (Expression relative to IgG4)**
H4L2	0.63	0.23
28G06	0.65	0.45

28D06	0.69	0.62
27B10	0.71	0.65
ICRF44	0.75	0.66
28E07-HH	0.87	0.75
M1/70	0.84	0.80
m2396	0.81	0.83
27E12	0.71	0.85
28E07	0.65	0.85
27A04	0.70	0.88
27A06	0.85	0.88
24G09	0.89	1.00
IgG4	**1**	**1**
28A12	0.87	1.07
27G04	0.89	1.14
27D06	1.05	1.38
DF4M-45	1.59	1.60
25A04	1.34	2.11
24H01	1.49	2.36
DF4M-9	1.68	3.35
25A06	1.74	3.50
24G05	1.64	3.85
DF4M-31	1.48	3.87
24F08	1.73	4.01
24F9	1.71	4.01
24G1	1.75	4.02
DF4-25	1.75	4.34
DF4-22	1.64	4.37
DF3M-5	1.68	4.40
DF3M-32	1.63	4.48

Table V: Tumor growth inhibition (TGI, %)

Days	**Group**	
	m2396	**28E07-HH**

	10mg/kg i.p. Q3D*10 doses	10mg/kg i.p. Q3D*10 doses
0	0.35	1.29
3	8.97	12.43
7	-52.71	2.03
10	-3.48	28.57
14	28.61	38.54
17	0.35	1.29
21	33.46	33.27
24	30.61	40.08
28	20.64	35.99
31	20.65	36.81
35	23.59	35.93

Table VI: Primer and probe sequences used in digital PCR

SEQ ID NO	Gene name	Sequence
555	2-LTR forward primer	5'- CTAACTAGGGAACCCACTGCT-3'
556	2-LTR reverse primer	5'- GTAGTTCTGCCAATCAGGGAAG-3'
557	2-LTR probe	5'- /56-FAM/ AGCCTCAAT/ZEN/AAAGCTTGCCTTGAGTGC /3IABkFQ/ -3'
558	RPP30 forward primer	5'-AGATTTGGACCTGCGAGCG-3'
559	RPP30 reverse primer	5'-GAGCGGCTGTCTCCACAAGT-3'
560	RPP30 probe	5'- /56-FAM/ TTCTGACCT/ZEN/GAAGGCTCTGCGCG/3IABkFQ/ -3'

Table VII: Heavy-chain CDR region sequences and light-chain CDR region sequences of SEQ ID NO: 159 through SEQ ID NO: 554

Anti-Mac-1 antibody CDR sequence clone: 24F08

SEQ ID Number	Description	Sequence
SEQ ID NO: 159	CDR-H1	GFTFSSYWMS
SEQ ID NO: 160	CDR-H2	IINYSGREADYADSVKG
SEQ ID NO: 161	CDR-H3	DGSYVGQAHEAFDI
SEQ ID NO: 162	CDR-L1	RASQSISKYLA

SEQ ID NO: 163	CDR-L2	GTSNLQS
SEQ ID NO: 164	CDR-L3	QQSRSWPLT

Anti-Mac-1 antibody CDR sequence clone: 24F09

SEQ ID Number	Description	Sequence
SEQ ID NO: 165	CDR-H1	GFTFSSAWMS
SEQ ID NO: 166	CDR-H2	TIYWSGSEINYADSVKG
SEQ ID NO: 167	CDR-H3	SFASGESAMDV
SEQ ID NO: 168	CDR-L1	RASQSISNYLA
SEQ ID NO: 169	CDR-L2	DASNLQS
SEQ ID NO: 170	CDR-L3	QQYYSSPPT

Anti-Mac-1 antibody CDR sequence clone: 24F11

SEQ ID Number	Description	Sequence
SEQ ID NO: 171	CDR-H1	GFTFSTSWMHW
SEQ ID NO: 172	CDR-H2	IINSGGGEAYYADSVKG
SEQ ID NO: 173	CDR-H3	GDAAFDY
SEQ ID NO: 174	CDR-L1	RASQLIRKKLA
SEQ ID NO: 175	CDR-L2	AASTLQS
SEQ ID NO: 176	CDR-L3	MQSGSPQYT

Anti-Mac-1 antibody CDR sequence clone: 24F12

SEQ ID Number	Description	Sequence
SEQ ID NO: 177	CDR-H1	GFTFTNYWMG
SEQ ID NO: 178	CDR-H2	IIISDGGEIIYADSVKG
SEQ ID NO: 179	CDR-H3	IHAGTGSSADY
SEQ ID NO: 180	CDR-L1	RASQSIYNYLN
SEQ ID NO: 181	CDR-L2	DASTLQS
SEQ ID NO: 182	CDR-L3	QQYYSYPWT

Anti-Mac-1 antibody CDR sequence clone: 24G01

SEQ ID Number	Description	Sequence
SEQ ID NO: 183	CDR-H1	GFTFRTFGMN

SEQ ID NO: 184	CDR-H2	GIVPSGSEIDYADSVKGR
SEQ ID NO: 185	CDR-H3	DHSHYTGPFDV
SEQ ID NO: 186	CDR-L1	RASQSIYSYLN
SEQ ID NO: 187	CDR-L2	GASILQY
SEQ ID NO: 188	CDR-L3	HQSNSSPGT

Anti-Mac-1 antibody CDR sequence clone: 24G05

SEQ ID Number	Description	Sequence
SEQ ID NO: 189	CDR-H1	GFTFTSYWMT
SEQ ID NO: 190	CDR-H2	TIVGGGGEADYADSVKG
SEQ ID NO: 191	CDR-H3	DYVADNHGAMDY
SEQ ID NO: 192	CDR-L1	RASQGLSSYLN
SEQ ID NO: 193	CDR-L2	GMSTLQS
SEQ ID NO: 194	CDR-L3	MQYYHWPYT

Anti-Mac-1 antibody CDR sequence clone: 24G07

SEQ ID Number	Description	Sequence
SEQ ID NO: 195	CDR-H1	GFTFSDYIMH
SEQ ID NO: 196	CDR-H2	AISPSGSEIYYADSVKG
SEQ ID NO: 197	CDR-H3	NAWDNNWVREYGMDY
SEQ ID NO: 198	CDR-L1	RASQSGNNNLA
SEQ ID NO: 199	CDR-L2	GASTLQS
SEQ ID NO: 200	CDR-L3	MQSNSYPLT

Anti-Mac-1 antibody CDR sequence clone: 24G08

SEQ ID Number	Description	Sequence
SEQ ID NO: 201	CDR-H1	GFTFSDYKIH
SEQ ID NO: 202	CDR-H2	IYADSVKG
SEQ ID NO: 203	CDR-H3	SSYGEGYAFDY
SEQ ID NO: 204	CDR-L1	RASQDVDSYLN
SEQ ID NO: 205	CDR-L2	DAISLQS
SEQ ID NO: 206	CDR-L3	QQYYSLPLT

Anti-Mac-1 antibody CDR sequence clone: 24G09

SEQ ID Number	Description	Sequence
SEQ ID NO: 207	CDR-H1	GFTFSDYAIG
SEQ ID NO: 208	CDR-H2	TIYWSGSNAYYADSVKG
SEQ ID NO: 209	CDR-H3	LFTLGYHGFDV
SEQ ID NO: 210	CDR-L1	RASQSINTYLN
SEQ ID NO: 211	CDR-L2	DASNLQS
SEQ ID NO: 212	CDR-L3	QQYDDLPFT

Anti-Mac-1 antibody CDR sequence clone: 24G10

SEQ ID Number	Description	Sequence
SEQ ID NO: 213	CDR-H1	SGFTFSSNSMS
SEQ ID NO: 214	CDR-H2	AINYSGREIYYADSVKG
SEQ ID NO: 215	CDR-H3	TDYNTFDY
SEQ ID NO: 216	CDR-L1	RASQSNSSHLN
SEQ ID NO: 217	CDR-L2	GVSNLQS
SEQ ID NO: 218	CDR-L3	QHYGSTPYT

Anti-Mac-1 antibody CDR sequence clone: 24G11

SEQ ID Number	Description	Sequence
SEQ ID NO: 219	CDR-H1	GFTFSDYYMS
SEQ ID NO: 220	CDR-H2	VISYGGGEAYYADSVKG
SEQ ID NO: 221	CDR-H3	AMASEYGPWDY
SEQ ID NO: 222	CDR-L1	RASQSISRHLT
SEQ ID NO: 223	CDR-L2	GASTLQS
SEQ ID NO: 224	CDR-L3	QQYHDWPLT

Anti-Mac-1 antibody CDR sequence clone: 24G12

SEQ ID Number	Description	Sequence
SEQ ID NO: 225	CDR-H1	GFTFGDDYMH
SEQ ID NO: 226	CDR-H2	AINYDGSWKYYADSVKG
SEQ ID NO: 227	CDR-H3	LSSIDEPPYGPFDV
SEQ ID NO: 228	CDR-L1	RASQSISTYLA

SEQ ID NO: 229	CDR-L2	EASSLQS
SEQ ID NO: 230	CDR-L3	QQYYNFPPT

Anti-Mac-1 antibody CDR sequence clone: 24H01

SEQ ID Number	Description	Sequence
SEQ ID NO: 231	CDR-H1	GFTFNNYYMS
SEQ ID NO: 232	CDR-H2	IIYYDGSEADYADSVKG
SEQ ID NO: 233	CDR-H3	NKDIYSVYGMDY
SEQ ID NO: 234	CDR-L1	RASQSISNYLA
SEQ ID NO: 235	CDR-L2	ATSNLQS
SEQ ID NO: 236	CDR-L3	QQANNTPPT

Anti-Mac-1 antibody CDR sequence clone: 24H02

SEQ ID Number	Description	Sequence
SEQ ID NO: 237	CDR-H1	GFTFSDYWMS
SEQ ID NO: 238	CDR-H2	SIVYGGSEIDYADSVKG
SEQ ID NO: 239	CDR-H3	VPGYSGTPFDY
SEQ ID NO: 240	CDR-L1	RASQSVSRYLA
SEQ ID NO: 241	CDR-L2	DTSSLQS
SEQ ID NO: 242	CDR-L3	QQSYSFPLT

Anti-Mac-1 antibody sequence clone: 24H03 (Underline is a CDR sequence)

SEQ ID Number	Description	Sequence
SEQ ID NO: 243	CDR-H1	GFTFKDSWMH
SEQ ID NO: 244	CDR-H2	IISYSGGEAIYADSVKG
SEQ ID NO: 245	CDR-H3	DSGGSAMGFDI
SEQ ID NO: 246	CDR-L1	RASQSIHSYLN
SEQ ID NO: 247	CDR-L2	GASSLQS
SEQ ID NO: 248	CDR-L3	QQYYRFPYT

Anti-Mac-1 antibody CDR sequence clone: 25A02

SEQ ID Number	Description	Sequence
SEQ ID NO: 249	CDR-H1	GFTFSDWYLH

SEQ ID NO: 250	CDR-H2	VINGGGSEIIYADSVKG
SEQ ID NO: 251	CDR-H3	GGDGDGSGFDD
SEQ ID NO: 252	CDR-L1	RASQSIHSYLN
SEQ ID NO: 253	CDR-L2	DASNLQS
SEQ ID NO: 254	CDR-L3	QQSGNYPFT

Anti-Mac-1 antibody CDR sequence clone: 25A04

SEQ ID Number	Description	Sequence
SEQ ID NO: 255	CDR-H1	GFTFSFTAMH
SEQ ID NO: 256	CDR-H2	AIIYNGSEADYADSVKG
SEQ ID NO: 257	CDR-H3	ANDYDHGCCDNYAMDY
SEQ ID NO: 258	CDR-L1	RASQGIGSYLY
SEQ ID NO: 259	CDR-L2	DASNLQS
SEQ ID NO: 260	CDR-L3	MQHGGWPLT

Anti-Mac-1 antibody CDR sequence clone: 25A06

SEQ ID Number	Description	Sequence
SEQ ID NO: 261	CDR-H1	GFTFSSYYMS
SEQ ID NO: 262	CDR-H2	TINYDGSEKDYADSVKG
SEQ ID NO: 263	CDR-H3	DRLGNYPWFDV
SEQ ID NO: 264	CDR-L1	RASQSISNYLA
SEQ ID NO: 265	CDR-L2	DANNLQS
SEQ ID NO: 266	CDR-L3	QQSYSWPLT

Anti-Mac-1 antibody CDR sequence clone: 25A09

SEQ ID Number	Description	Sequence
SEQ ID NO: 267	CDR-H1	GFTFTEWWMS
SEQ ID NO: 268	CDR-H2	TISYGGSEAIYADSVKG
SEQ ID NO: 269	CDR-H3	TSSDRLLFDY
SEQ ID NO: 270	CDR-L1	RASQSIKSSLA
SEQ ID NO: 271	CDR-L2	GASTLQS
SEQ ID NO: 272	CDR-L3	MQTNRHPWT

Anti-Mac-1 antibody CDR sequence clone: 25A10

SEQ ID Number	Description	Sequence
SEQ ID NO: 273	CDR-H1	GFTFSNYNLH
SEQ ID NO: 274	CDR-H2	TISYSGSEIIYADSVKG
SEQ ID NO: 275	CDR-H3	EDEYTYYYFDP
SEQ ID NO: 276	CDR-L1	RASQSVSSYLA
SEQ ID NO: 277	CDR-L2	DASKLQS
SEQ ID NO: 278	CDR-L3	KQSYSSPPT

Anti-Mac-1 antibody sequence clone: 25B03 (Underline is a CDR sequence)

SEQ ID Number	Description	Sequence
SEQ ID NO: 279	CDR-H1	GFTFSDYWMH
SEQ ID NO: 281	CDR-H2	TIIGGGSEAGYADSVKG
SEQ ID NO: 281	CDR-H3	DRSYGYLGFDI
SEQ ID NO: 282	CDR-L1	RASQSIRNSLH
SEQ ID NO: 283	CDR-L2	SAGKLQS
SEQ ID NO: 284	CDR-L3	QQSNSFPLT

Anti-Mac-1 antibody CDR sequence clone: 25B04

SEQ ID Number	Description	Sequence
SEQ ID NO: 285	CDR-H1	GFTFSTNWMH
SEQ ID NO: 286	CDR-H2	MISYSGGEAIYADSVKG
SEQ ID NO: 287	CDR-H3	NWLPYAMDY
SEQ ID NO: 288	CDR-L1	RASQSIRSYLS
SEQ ID NO: 289	CDR-L2	SASTLQS
SEQ ID NO: 290	CDR-L3	QQSYSTPLT

Anti-Mac-1 antibody CDR sequence clone: 25B01

SEQ ID Number	Description	Sequence
SEQ ID NO: 291	CDR-H1	GFTFSSYDVG
SEQ ID NO: 292	CDR-H2	GIVPSGGNIYYADSVKG
SEQ ID NO: 293	CDR-H3	HRSYAYYAFDY
SEQ ID NO: 294	CDR-L1	RASQNVRNYLG

SEQ ID NO: 295	CDR-L2	DASSLQS
SEQ ID NO: 296	CDR-L3	QQYGDWPLT

Anti-Mac-1 antibody CDR sequence clone: DF3-10

SEQ ID Number	Description	Sequence
SEQ ID NO: 297	CDR-H1	GFTFTDAYMS
SEQ ID NO: 298	CDR-H2	TISSYGSSTYYADSVKG
SEQ ID NO: 299	CDR-H3	PRYIESPVYDY
SEQ ID NO: 300	CDR-L1	RASQSIAKYLA
SEQ ID NO: 301	CDR-L2	ETSNLQS
SEQ ID NO: 302	CDR-L3	QQSSSSPET

Anti-Mac-1 antibody CDR sequence clone: DF3-28

SEQ ID Number	Description	Sequence
SEQ ID NO: 303	CDR-H1	GFTFTNYWMH
SEQ ID NO: 304	CDR-H2	TIIYDGGETGYADSVKG
SEQ ID NO: 305	CDR-H3	NSRKSGMDY
SEQ ID NO: 306	CDR-L1	RASQSIYKYLN
SEQ ID NO: 307	CDR-L2	DASTLQS
SEQ ID NO: 308	CDR-L3	MQYYSDPLT

Anti-Mac-1 antibody CDR sequence clone: DF3-30

SEQ ID Number	Description	Sequence
SEQ ID NO: 309	CDR-H1	GFTFSGYAWS
SEQ ID NO: 310	CDR-H2	MISPAGGSTYYADSVKG
SEQ ID NO: 311	CDR-H3	DRNAGGDSYYSFDV
SEQ ID NO: 312	CDR-L1	RASQSINSHLA
SEQ ID NO: 313	CDR-L2	AAINLQS
SEQ ID NO: 314	CDR-L3	QQTNHYPLT

Anti-Mac-1 antibody CDR sequence clone: DF3-32

SEQ ID Number	Description	Sequence
SEQ ID NO: 315	CDR-H1	GFTFSSHAMH

SEQ ID NO: 316	CDR-H2	SILSGGSETNYADSVKG
SEQ ID NO: 317	CDR-H3	DTYEVTGNLLDY
SEQ ID NO: 318	CDR-L1	RASQSVWSYLN
SEQ ID NO: 319	CDR-L2	GASSLQS
SEQ ID NO: 320	CDR-L3	MQSYSWPFT

Anti-Mac-1 antibody CDR sequence clone: DF4-16

SEQ ID Number	Description	Sequence
SEQ ID NO: 321	CDR-H1	GFTFNEYAMS
SEQ ID NO: 322	CDR-H2	SIIPDGSETDYADSVKG
SEQ ID NO: 323	CDR-H3	SLSSSGMHGDI
SEQ ID NO: 324	CDR-L1	RASQSINNYLN
SEQ ID NO: 325	CDR-L2	KASTLQS
SEQ ID NO: 326	CDR-L3	HQYHSPYT

Anti-Mac-1 antibody CDR sequence clone: DF4-17

SEQ ID Number	Description	Sequence
SEQ ID NO: 327	CDR-H1	GFTFSDYGWH
SEQ ID NO: 328	CDR-H2	IIESDGSGTYYADSVKG
SEQ ID NO: 329	CDR-H3	NGEVGERGVRDYDYAMDY
SEQ ID NO: 330	CDR-L1	RASQSINRYLN
SEQ ID NO: 331	CDR-L2	ATSSLQS
SEQ ID NO: 332	CDR-L3	QQYGSTPIT

Anti-Mac-1 antibody CDR sequence clone: DF4-22

SEQ ID Number	Description	Sequence
SEQ ID NO: 333	CDR-H1	GFTFTDYNVH
SEQ ID NO: 334	CDR-H2	GINSSGSETNYADSVKG
SEQ ID NO: 335	CDR-H3	DSVFKTVGGYDAVMDY
SEQ ID NO: 336	CDR-L1	RASQSIYNYLA
SEQ ID NO: 337	CDR-L2	GTSTLQS
SEQ ID NO: 338	CDR-L3	MQSYSSPTT

Anti-Mac-1 antibody CDR sequence clone: DF4-25

SEQ ID Number	Description	Sequence
SEQ ID NO: 339	CDR-H1	GFTFKDYWLS
SEQ ID NO: 340	CDR-H2	IINYGGSETYYADSVKG
SEQ ID NO: 341	CDR-H3	TQTSYVMDY
SEQ ID NO: 342	CDR-L1	RASQSVRSGLN
SEQ ID NO: 343	CDR-L2	AASSLQS
SEQ ID NO: 344	CDR-L3	MQSHSWPLT

Anti-Mac-1 antibody CDR sequence clone: DF4-26

SEQ ID Number	Description	Sequence
SEQ ID NO: 345	CDR-H1	GFTFSSGYMS
SEQ ID NO: 346	CDR-H2	TISGSGRETNYADSVKG
SEQ ID NO: 347	CDR-H3	DAWGGDSYFDP
SEQ ID NO: 348	CDR-L1	RASQSIWSNLS
SEQ ID NO: 349	CDR-L2	NASSLQS
SEQ ID NO: 350	CDR-L3	QQYHGTPIT

Anti-Mac-1 antibody CDR sequence clone: DF4-42

SEQ ID Number	Description	Sequence
SEQ ID NO: 351	CDR-H1	GFTFTDYQMS
SEQ ID NO: 352	CDR-H2	TIIWSGSETNYADSVKG
SEQ ID NO: 353	CDR-H3	NKTPFDY
SEQ ID NO: 354	CDR-L1	RASQSIRTHLA
SEQ ID NO: 355	CDR-L2	DNSNLQS
SEQ ID NO: 356	CDR-L3	QQYKGSPLT

Anti-Mac-1 antibody CDR sequence clone: DF3M-1

SEQ ID Number	Description	Sequence
SEQ ID NO: 357	CDR-H1	GFTFTSYAMS
SEQ ID NO: 358	CDR-H2	SISYSGGETDYADSVKG
SEQ ID NO: 359	CDR-H3	SKGGLYFDY
SEQ ID NO: 360	CDR-L1	RASQSISSYLA

SEQ ID NO: 361	CDR-L2	GASSLQS
SEQ ID NO: 362	CDR-L3	QQYGSTPET

Anti-Mac-1 antibody CDR sequence clone: DF3M-2

SEQ ID Number	Description	Sequence
SEQ ID NO: 363	CDR-H1	GFTFSGYWIH
SEQ ID NO: 364	CDR-H2	TISYSGDEAYYADSVKG
SEQ ID NO: 365	CDR-H3	SPSDGDYGFDY
SEQ ID NO: 366	CDR-L1	RASQSINNYLS
SEQ ID NO: 367	CDR-L2	DGRILQS
SEQ ID NO: 368	CDR-L3	MQYLAYPWT

Anti-Mac-1 antibody sequence clone: DF3M-5 (Underline is a CDR sequence)

SEQ ID Number	Description	Sequence
SEQ ID NO: 369	CDR-H1	GFTFGTYDMH
SEQ ID NO: 370	CDR-H2	MISPSGGDTYYADSVKG
SEQ ID NO: 371	CDR-H3	DSSGDWYAMAY
SEQ ID NO: 372	CDR-L1	RASQSIRRYLA
SEQ ID NO: 373	CDR-L2	GASNLQS
SEQ ID NO: 374	CDR-L3	QHSSDTPLT

Anti-Mac-1 antibody CDR sequence clone: DF3M-18

SEQ ID Number	Description	Sequence
SEQ ID NO: 375	CDR-H1	GFTFSDSAMG
SEQ ID NO: 376	CDR-H2	IISYYGSETYYADSVKG
SEQ ID NO: 377	CDR-H3	NPDGDLSALDY
SEQ ID NO: 378	CDR-L1	RASQPISSYLN
SEQ ID NO: 379	CDR-L2	GASSLQS
SEQ ID NO: 380	CDR-L3	QQRLRSPFT

Anti-Mac-1 antibody CDR sequence clone: DF3M-19

SEQ ID Number	Description	Sequence
SEQ ID NO: 381	CDR-H1	GFTFTSYAMS

SEQ ID NO: 382	CDR-H2	SINSGGSETNYADSVKG
SEQ ID NO: 383	CDR-H3	GEYYTDVWPSGFDI
SEQ ID NO: 384	CDR-L1	RASQSISNPLN
SEQ ID NO: 385	CDR-L2	DASTLQS
SEQ ID NO: 386	CDR-L3	QQYGSSPST

Anti-Mac-1 antibody CDR sequence clone: DF3M-30

SEQ ID Number	Description	Sequence
SEQ ID NO: 387	CDR-H1	GFTFSNYEMG
SEQ ID NO: 388	CDR-H2	IISWSGSETIYADSVKG
SEQ ID NO: 389	CDR-H3	NGRGDYAFDF
SEQ ID NO: 390	CDR-L1	RASQSVSNNLA
SEQ ID NO: 391	CDR-L2	RTTSLQS
SEQ ID NO: 392	CDR-L3	MQYGSLPST

Anti-Mac-1 antibody CDR sequence clone: DF3M-36

SEQ ID Number	Description	Sequence
SEQ ID NO: 393	CDR-H1	GFTFSDYGMS
SEQ ID NO: 394	CDR-H2	IISPGGRETYYADSVKG
SEQ ID NO: 395	CDR-H3	PDGGYYEFDV
SEQ ID NO: 396	CDR-L1	RASQSISNYLA
SEQ ID NO: 397	CDR-L2	DASTLQS
SEQ ID NO: 398	CDR-L3	HQRNSWPPT

Anti-Mac-1 antibody CDR sequence clone: DF3M-42

SEQ ID Number	Description	Sequence
SEQ ID NO: 399	CDR-H1	GFTFSSYHMH
SEQ ID NO: 400	CDR-H2	AIDSSGRETFYADSVKG
SEQ ID NO: 401	CDR-H3	GYGDYFDY
SEQ ID NO: 402	CDR-L1	RASQSGSNYLA
SEQ ID NO: 403	CDR-L2	AASTLQS
SEQ ID NO: 404	CDR-L3	QQSGSTPYT

Anti-Mac-1 antibody CDR sequence clone: DF4M-1

SEQ ID Number	Description	Sequence
SEQ ID NO: 405	CDR-H1	GFTFDNYVMG
SEQ ID NO: 406	CDR-H2	MINYGGSETIYADSVKG
SEQ ID NO: 407	CDR-H3	SACDYCDFDY
SEQ ID NO: 408	CDR-L1	RASQVVGSYLN
SEQ ID NO: 409	CDR-L2	GASTLQS
SEQ ID NO: 410	CDR-L3	QQYYNYPGT

Anti-Mac-1 antibody CDR sequence clone: DF4M-3

SEQ ID Number	Description	Sequence
SEQ ID NO: 411	CDR-H1	GFTFTTYYMS
SEQ ID NO: 412	CDR-H2	TIIPSGSETNYADSVKG
SEQ ID NO: 413	CDR-H3	VPAASEGPMDY
SEQ ID NO: 414	CDR-L1	RASQSISRNLA
SEQ ID NO: 415	CDR-L2	DASSLQS
SEQ ID NO: 416	CDR-L3	QQYYHSPPT

Anti-Mac-1 antibody CDR sequence clone: DF4M-7-1

SEQ ID Number	Description	Sequence
SEQ ID NO: 417	CDR-H1	GFTFDSYAMH
SEQ ID NO: 418	CDR-H2	SIDGSGRETDYADSVKG
SEQ ID NO: 419	CDR-H3	DGSEGYAFDP
SEQ ID NO: 420	CDR-L1	RASQIIRHKLN
SEQ ID NO: 421	CDR-L2	DASTLQS
SEQ ID NO: 422	CDR-L3	QQYNSWPIT

Anti-Mac-1 antibody CDR sequence clone: DF4M-7-4

SEQ ID Number	Description	Sequence
SEQ ID NO: 423	CDR-H1	GFTFTSYIMS
SEQ ID NO: 424	CDR-H2	IISYSGGETYYADSVKG
SEQ ID NO: 425	CDR-H3	NGINDDSFDY
SEQ ID NO: 426	CDR-L1	RASQSISNYLN

SEQ ID NO: 427	CDR-L2	GASSLQS
SEQ ID NO: 428	CDR-L3	QQRLHWPGT

Anti-Mac-1 antibody CDR sequence clone: DF4M-9

SEQ ID Number	Description	Sequence
SEQ ID NO: 429	CDR-H1	GFTFTNHWMS
SEQ ID NO: 430	CDR-H2	TIEGSGSETIYADSVKG
SEQ ID NO: 431	CDR-H3	SSRTLFDY
SEQ ID NO: 432	CDR-L1	RASQGVYSYLA
SEQ ID NO: 433	CDR-L2	DASSLQS
SEQ ID NO: 434	CDR-L3	QQYYHYPPT

Anti-Mac-1 antibody CDR sequence clone: DF4M-11

SEQ ID Number	Description	Sequence
SEQ ID NO: 435	CDR-H1	GFTFSNYYMD
SEQ ID NO: 436	CDR-H2	SINPWGGNKYYADSVKG
SEQ ID NO: 437	CDR-H3	TITSKYEDYAMDY
SEQ ID NO: 438	CDR-L1	RASQSISSYLA
SEQ ID NO: 439	CDR-L2	LTSNLQS
SEQ ID NO: 440	CDR-L3	QQTAQNPFT

Anti-Mac-1 antibody CDR sequence clone: DF4M-17

SEQ ID Number	Description	Sequence
SEQ ID NO: 441	CDR-H1	GFTFSDYWVA
SEQ ID NO: 442	CDR-H2	TISYSGSETEYADSVKG
SEQ ID NO: 443	CDR-H3	YGGSDYYGFDP
SEQ ID NO: 444	CDR-L1	RASQSISNNLA
SEQ ID NO: 445	CDR-L2	ATTTLQS
SEQ ID NO: 446	CDR-L3	MQSNTPWT

Anti-Mac-1 antibody CDR sequence clone: DF4M-18

SEQ ID Number	Description	Sequence
SEQ ID NO: 447	CDR-H1	GFTFSSYAIS

SEQ ID NO: 448	CDR-H2	AISSGGSETDYADSVKG
SEQ ID NO: 449	CDR-H3	GESGYYMAEDV
SEQ ID NO: 450	CDR-L1	RASQSVSSFLA
SEQ ID NO: 451	CDR-L2	AASKLQS
SEQ ID NO: 452	CDR-L3	QQYSVTPIT

Anti-Mac-1 antibody CDR sequence clone: DF4M-21

SEQ ID Number	Description	Sequence
SEQ ID NO: 453	CDR-H1	GFTFSSYAMS
SEQ ID NO: 454	CDR-H2	AISSYGGETDYADSVKG
SEQ ID NO: 455	CDR-H3	GDAYSSFVDNPFDI
SEQ ID NO: 456	CDR-L1	RASQSISNYLA
SEQ ID NO: 457	CDR-L2	DASTLQS
SEQ ID NO: 458	CDR-L3	MQYESTPWT

Anti-Mac-1 antibody CDR sequence clone: DF4M-23

SEQ ID Number	Description	Sequence
SEQ ID NO: 459	CDR-H1	GFTFTSYAMS
SEQ ID NO: 460	CDR-H2	AISPSGSETEYADSVKG
SEQ ID NO: 461	CDR-H3	GFYNDYIFDL
SEQ ID NO: 462	CDR-L1	RASQSISSYLN
SEQ ID NO: 463	CDR-L2	AASSLQS
SEQ ID NO: 464	CDR-L3	QQYLSTPYT

Anti-Mac-1 antibody CDR sequence clone: DF4M-30

SEQ ID Number	Description	Sequence
SEQ ID NO: 465	CDR-H1	GFTFRNNAMH
SEQ ID NO: 466	CDR-H2	VINSGGSETYYADSVKG
SEQ ID NO: 467	CDR-H3	DEPSDEYGMYGFDY
SEQ ID NO: 468	CDR-L1	RASQSISSYLN
SEQ ID NO: 469	CDR-L2	KASNLQS
SEQ ID NO: 470	CDR-L3	VQYSRSPTT

Anti-Mac-1 antibody CDR sequence clone: DF4M-31

SEQ ID Number	Description	Sequence
SEQ ID NO: 471	CDR-H1	GFTFTSATMS
SEQ ID NO: 472	CDR-H2	IISPGGSETYYADSVKG
SEQ ID NO: 473	CDR-H3	GGDYPSYYMDP
SEQ ID NO: 474	CDR-L1	RASQSISNYLA
SEQ ID NO: 475	CDR-L2	GTSSLQS
SEQ ID NO: 476	CDR-L3	QQGHQWPWT

Anti-Mac-1 antibody CDR sequence clone: DF4M-45

SEQ ID Number	Description	Sequence
SEQ ID NO: 477	CDR-H1	GFTFTSYYMS
SEQ ID NO: 478	CDR-H2	TIISDGSETGYADSVKG
SEQ ID NO: 479	CDR-H3	TNRYGFQFDY
SEQ ID NO: 480	CDR-L1	RASQGARNGLH
SEQ ID NO: 481	CDR-L2	DASTLQS
SEQ ID NO: 482	CDR-L3	QQRYSYPPT

Anti-Mac-1 antibody CDR sequence clone: 28E07, 28E07-HH, 28E07-B1H, 28E07-B2H, 28E07-B3H, 28E07-B4H, 28E07-HB1, 28E07-HB2, 28E07-HB3, 28E07-HB4, 28E07-B1B1, 28E07-B1B2, 28E07-B2B1, and 28E07-B2B2

SEQ ID Number	Description	Sequence
SEQ ID NO: 483	CDR-H1	GYSFTDYNMN
SEQ ID NO: 484	CDR-H2	EINPGYGTSRYNQKFKD
SEQ ID NO: 485	CDR-H3	ADVDYGDVMDY
SEQ ID NO: 486	CDR-L1	SASSSVSYMH
SEQ ID NO: 487	CDR-L2	DTSKLAS
SEQ ID NO: 488	CDR-L3	QQWSSNPPT

Anti-Mac-1 antibody CDR sequence clone: 28A12

SEQ ID Number	Description	Sequence
SEQ ID NO: 489	CDR-H1	GYSFTDYNMN
SEQ ID NO: 490	CDR-H2	EINPGYGTSRYNQKFKD

SEQ ID NO: 491	CDR-H3	ADVDYGDTMDY
SEQ ID NO: 492	CDR-L1	SASSSVSDMH
SEQ ID NO: 493	CDR-L2	DTSKLAS
SEQ ID NO: 494	CDR-L3	QQWSSNPPT

Anti-Mac-1 antibody CDR sequence clone: 27G04

SEQ ID Number	Description	Sequence
SEQ ID NO: 495	CDR-H1	GYSFTDYNMN
SEQ ID NO: 496	CDR-H2	VINPNYGTTSYNQKFKG
SEQ ID NO: 497	CDR-H3	TFDYDDDAFAY
SEQ ID NO: 498	CDR-L1	SASSSVSDMH
SEQ ID NO: 499	CDR-L2	DTSKLAS
SEQ ID NO: 500	CDR-L3	QQWSSNPPT

Anti-Mac-1 antibody CDR sequence clone: 27A04

SEQ ID Number	Description	Sequence
SEQ ID NO: 501	CDR-H1	GYSFTDYNMN
SEQ ID NO: 502	CDR-H2	VINPNYGTTSYNQKFKG
SEQ ID NO: 503	CDR-H3	TYDYDGDAFAY
SEQ ID NO: 504	CDR-L1	SASSSVSYMH
SEQ ID NO: 505	CDR-L2	DTSKLAS
SEQ ID NO: 506	CDR-L3	QQWSSNPPT

Anti-Mac-1 antibody CDR sequence clone: 27A06

SEQ ID Number	Description	Sequence
SEQ ID NO: 507	CDR-H1	GYSFTDYNMN
SEQ ID NO: 508	CDR-H2	EINPNYGTTRHNQKFKG
SEQ ID NO: 509	CDR-H3	TYDYDEDAFAY
SEQ ID NO: 510	CDR-L1	SASSSVSYMH
SEQ ID NO: 511	CDR-L2	DTSKLAS
SEQ ID NO: 512	CDR-L3	QQWSSNPPT

Anti-Mac-1 antibody CDR sequence clone: 28G06

SEQ ID Number	Description	Sequence
SEQ ID NO: 513	CDR-H1	GYSFTDYNMN
SEQ ID NO: 514	CDR-H2	IINPNYGTTSYNQKFKG
SEQ ID NO: 515	CDR-H3	GYDYDESGFAY
SEQ ID NO: 516	CDR-L1	SASSSVSYMY
SEQ ID NO: 517	CDR-L2	DTSNLAS
SEQ ID NO: 518	CDR-L3	QQWSSNPPT

Anti-Mac-1 antibody CDR sequence clone: 27B10

SEQ ID Number	Description	Sequence
SEQ ID NO: 519	CDR-H1	GYSFTDYNMN
SEQ ID NO: 520	CDR-H2	RINPNFGTTTYNQKFKG
SEQ ID NO: 521	CDR-H3	GYDYDESGFAY
SEQ ID NO: 522	CDR-L1	SASSSVSYMY
SEQ ID NO: 523	CDR-L2	DTSNLAS
SEQ ID NO: 524	CDR-L3	QQWSSYPPT

Anti-Mac-1 antibody CDR sequence clone: 27D06

SEQ ID Number	Description	Sequence
SEQ ID NO: 525	CDR-H1	GYSFTDYNMN
SEQ ID NO: 526	CDR-H2	VINPNYGTTSYNQKFKG
SEQ ID NO: 527	CDR-H3	TYDYDGDAFAY
SEQ ID NO:528	CDR-L1	RASSSVSSNNLH
SEQ ID NO:529	CDR-L2	STSNLAT
SEQ ID NO: 530	CDR-L3	QQWNSNPPT

Anti-Mac-1 antibody CDR sequence clone: 28D06

SEQ ID Number	Description	Sequence
SEQ ID NO: 531	CDR-H1	GYSFTDYNMN
SEQ ID NO: 532	CDR-H2	EINPNYGTTRYNQKFKG
SEQ ID NO: 533	CDR-H3	PSIYYDYDDAMDY
SEQ ID NO: 534	CDR-L1	SASSSVNYMY
SEQ ID NO: 535	CDR-L2	DTSNLAS

SEQ ID NO: 536	CDR-L3	QQWITYPPTLT

Anti-Mac-1 antibody CDR sequence clone: 27E12

SEQ ID Number	Description	Sequence
SEQ ID NO: 537	CDR-H1	GYTFTSYWMH
SEQ ID NO: 538	CDR-H2	AIYPGNSDTSYNQKFKGKA
SEQ ID NO: 539	CDR-H3	GSYEFAY
SEQ ID NO: 540	CDR-L1	SVSSSVSYMY
SEQ ID NO: 541	CDR-L2	DTSNLAS
SEQ ID NO: 542	CDR-L3	QQWSSNPFT

Anti-Mac-1 antibody CDR sequence clone: m2396

SEQ ID Number	Description	Sequence
SEQ ID NO: 543	CDR-H1	GFSLTSNSIS
SEQ ID NO: 544	CDR-H2	AIWSGGGTDYNPSLKS
SEQ ID NO: 545	CDR-H3	RGGYPYYFDY
SEQ ID NO: 546	CDR-L1	KSSQSLLYSENQENYLA
SEQ ID NO: 547	CDR-L2	WASTRQS
SEQ ID NO: 548	CDR-L3	QQYYDTPLT

Anti-Mac-1 antibody CDR sequence clone: H4L2

SEQ ID Number	Description	Sequence
SEQ ID NO: 549	CDR-H1	NYWIN
SEQ ID NO: 550	CDR-H2	NIYPSDTYINHNQKFKD
SEQ ID NO: 551	CDR-H3	SAYANYFDY
SEQ ID NO: 552	CDR-L1	RASQNIGTSIH
SEQ ID NO: 553	CDR-L2	YASESIS
SEQ ID NO: 554	CDR-L3	QQSDSWPTLT

Claims

What is claimed is:

1. An antibody against human Mac-1, wherein the antibody binds to a specific state of human Mac-1 and modulates Th1 and/or Th2 cytokine secretions by TLR-activated immune cells.

2. The antoby according to claim 1, wherein the Th1 cytokine secretion is enhanced to a greater extent than the Th2 ctokine secretion.

3. The antibody according to claim 1, wherein the antibody comprises a heavy-chain variable region sequence having CDR-H1, CDR-H2, and CDR-H3 sequences; and a light-chain variable region sequence having CDR-L1, CDR-L2, and CDR-L3 sequences, wherein

the CDR-H1 has the sequence of SEQ ID NO: 543, 549, 483, 369, 189, 159, 165, 171, 177, 183, 195, 201, 207, 213, 219, 225, 231, 237, 243, 249, 255, 261, 267, 273, 279, 285, 291, 297, 303, 309, 315, 321, 327, 333, 339, 345, 351, 357, 363, 375, 381, 387, 393, 399, 405, 411, 417, 423, 429, 435, 441, 447, 453, 459, 465, 471, 477, 489, 495, 501, 507, 513, 519, 525, 531, or 537;

the CDR-H2 has the sequence of SEQ ID NO: 544, 550, 484, 370, 190, 160, 166, 172, 178, 184, 196, 202, 208, 214, 220, 226, 232, 238, 244, 250, 256, 262, 268, 274, 280, 286, 292, 298, 304, 310, 316, 322, 328, 334, 340, 346, 352, 358, 364, 376, 382, 388, 394, 400, 406, 412, 418, 424, 430, 436, 442, 448, 454, 460, 466, 472, 478, 490, 496, 502, 508, 514, 520, 526, 532, or 538;

the CDR-H3 has the sequence of SEQ ID NO: 545, 551, 485, 371, 191, 161, 167, 173, 179, 185, 197, 203, 209, 215, 221, 227, 233, 239, 245, 251, 257, 263, 269, 275, 281, 287, 293, 299, 305, 311, 317, 323, 329, 335, 341, 347, 353, 359, 365, 377, 383, 389, 395, 401, 407, 413, 419, 425, 431, 437, 443, 449, 455, 461, 467, 473, 479, 491, 497, 503, 509, 515, 521, 527, 533, or 539;

the CDR-L1 has the sequence of SEQ ID NO: 546, 552, 486, 372, 192, 162, 168, 174, 180, 186, 198, 204, 210, 216, 222, 228, 234, 240, 246, 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, 366, 378, 384, 390, 396, 402, 408, 414, 420, 426, 432, 438, 444, 450, 456, 462, 468, 474, 480, 492, 498, 504, 510, 516, 522, 528, 534, or 540;

the CDR-L2 has the sequence of SEQ ID NO: 547, 553, 487, 373, 193, 163, 169,

175, 181, 187, 199, 205, 211, 217, 223, 229, 235, 241, 247, 253, 259, 265, 271, 277, 283, 289, 295, 301, 307, 313, 319, 325, 331, 337, 343, 349, 355, 361, 367, 379, 385, 391, 397, 403, 409, 415, 421, 427, 433, 439, 445, 451, 457, 463, 469, 475, 481, 493, 499, 505, 511, 517, 523, 529, 535, or 541; and

the CDR-L3 has the sequence of SEQ ID NO: 548, 554, 488, 374, 194, 164, 170, 176, 182, 188, 200, 206, 212, 218, 224, 230, 236, 242, 248, 254, 260, 266, 272, 278, 284, 290, 296, 302, 308, 314, 320, 326, 332, 338, 344, 350, 356, 362, 368, 380, 386, 392, 398, 404, 410, 416, 422, 428, 434, 440, 446, 452, 458, 464, 470, 476, 482, 494, 500, 506, 512, 518, 524, 530, 536, or 542.

4. The antibody against human Mac-1 according to claim 1, wherein the CDR-H1, CDR-H2, CDR-H3, CDR-L1, CDR-L2, and CDR-L3 have the sequences of SEQ ID NO: 159-164, or SEQ ID NO: 165-170, or SEQ ID NO: 171-176, or SEQ ID NO: 177-182, or SEQ ID NO: 183-188, or SEQ ID NO: 189-194, or SEQ ID NO: 195-200, or SEQ ID NO: 201-206, or SEQ ID NO: 207-212, or SEQ ID NO: 213-218, or SEQ ID NO: 219-224, or SEQ ID NO: 225-230, or SEQ ID NO: 231-236, or SEQ ID NO: 237-242, or SEQ ID NO: 243-248, or SEQ ID NO: 249-254, or SEQ ID NO: 255-260, or SEQ ID NO: 261-266, or SEQ ID NO: 267-272, or SEQ ID NO: 273-278, or SEQ ID NO: 279-284, or SEQ ID NO: 285-290, or SEQ ID NO: 291-296, or SEQ ID NO: 297-302, or SEQ ID NO: 303-308, or SEQ ID NO: 309-314, or SEQ ID NO: 315-320, or SEQ ID NO: 321-326, or SEQ ID NO: 327-332, or SEQ ID NO: 333-338, or SEQ ID NO: 339-344, or SEQ ID NO: 345-350, or SEQ ID NO: 351-356, or SEQ ID NO: 357-362, or SEQ ID NO: 363-368, or SEQ ID NO: 369-374, or SEQ ID NO: 375-380, or SEQ ID NO: 381-386, or SEQ ID NO: 387-392, or SEQ ID NO: 393-398, or SEQ ID NO: 399-404, or SEQ ID NO: 405-410, or SEQ ID NO: 411-416, or SEQ ID NO: 417-422, or SEQ ID NO: 423-428, or SEQ ID NO: 429-434, or SEQ ID NO: 435-440, or SEQ ID NO: 441-446, or SEQ ID NO: 447-452, or SEQ ID NO: 453-458, or SEQ ID NO: 459-464, or SEQ ID NO: 465-470, or SEQ ID NO: 471-476, or SEQ ID NO: 477-482, or SEQ ID NO: 483-488, or SEQ ID NO: 489-494, or SEQ ID NO: 495-500, or SEQ ID NO: 501-506, or SEQ ID NO: 507-512, or SEQ ID NO: 513-518, or SEQ ID NO: 519-524, or SEQ ID NO: 525-530, or SEQ ID NO: 531-536, or SEQ ID NO: 537-542, or SEQ ID NO: 543-548, or SEQ ID NO: 549-554.

5. The antibody against human Mac-1 according to claim 1, wherein the CDR-H1, CDR-H2, CDR-H3, CDR-L1, CDR-L2, and CDR-L3 have the sequences of SEQ ID NO:

543-548, or SEQ ID NO: 549-554, or SEQ ID NO: 483-488, or SEQ ID NO: 369-374, or SEQ ID NO: 189-194.

6. The antibody against human Mac-1 according to claim 1, wherein the heavy-chain variable region sequence is SEQ ID NO: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, or 157; and the light-chain variable region sequence is SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, or 158.

7. The antibody against human Mac-1 according to claim 1, wherein the heavy-chain variable region sequence and the light-chain variable region sequence have the following sequence pair: SEQ ID NO:1 and 2, or SEQ ID NO:3 and 4, or SEQ ID NO:5 and 6, or SEQ ID NO:7 and 8, or SEQ ID NO:9 and 10, or SEQ ID NO:11 and 12, or SEQ ID NO:13 and 14, or SEQ ID NO:15 and 16, or SEQ ID NO:17 and 18, or SEQ ID NO:19 and 20, or SEQ ID NO:21 and 22, or SEQ ID NO:23 and 24, or SEQ ID NO:25 and 26, or SEQ ID NO:27 and 28, or SEQ ID NO:29 and 30, or SEQ ID NO:31 and 32, or SEQ ID NO:33 and 34, or SEQ ID NO:35 and 36, or SEQ ID NO:37 and 38, or SEQ ID NO:39 and 40, or SEQ ID NO:41 and 42, or SEQ ID NO:43 and 44, or SEQ ID NO:45 and 46, or SEQ ID NO:47 and 48, or SEQ ID NO:49 and 50, or SEQ ID NO:51 and 52, or SEQ ID NO:53 and 54, or SEQ ID NO:55 and 56, or SEQ ID NO:57 and 58, or SEQ ID NO:59 and 60, or SEQ ID NO:61 and 62, or SEQ ID NO:63 and 64, or SEQ ID NO:65 and 66, or SEQ ID NO:67 and 68, or SEQ ID NO:69 and 70, or SEQ ID NO:71 and 72, or SEQ ID NO:73 and 74, or SEQ ID NO:75 and 76, or SEQ ID NO:77 and 78, or SEQ ID NO:79 and 80, or SEQ ID NO:81 and 82, or SEQ ID NO:83 and 842, or SEQ ID NO:85 and 86, or SEQ ID NO:87 and 88, or SEQ ID NO:89 and 90, or SEQ ID NO:91 and 92, or SEQ ID NO:93 and 94, or SEQ ID NO:95 and 96, or SEQ ID NO:97 and 98, or SEQ ID NO:99 and 100, or SEQ ID NO:101 and 102, or SEQ ID NO:103 and 104, or SEQ ID NO:105 and 106, or SEQ ID NO:107 and 108, or SEQ ID NO:109 and 110, or SEQ ID NO:111 and 112, or SEQ ID NO:113 and 114, or SEQ ID NO:115 and 116, or SEQ ID NO:117 and 118, or SEQ ID NO:119 and 120, or

SEQ ID NO:121 and 122, or SEQ ID NO:123 and 124, or SEQ ID NO:125 and 126, or SEQ ID NO:127 and 128, or SEQ ID NO:129 and 130, or SEQ ID NO:131 and 132, or SEQ ID NO:133 and 134, or SEQ ID NO:135 and 136, or SEQ ID NO:137 and 138, or SEQ ID NO:139 and 140, or SEQ ID NO:141 and 142, or SEQ ID NO:143 and 144, or SEQ ID NO:145 and 146, or SEQ ID NO:147 and 148, or SEQ ID NO:149 and 150, or SEQ ID NO:151 and 152, or SEQ ID NO:153 and 154, or SEQ ID NO:155 and 156, or SEQ ID NO:157 and 158.

8. The antibody against human Mac-1 according to claim 1, wherein the heavy-chain variable region sequence and the light-chain variable region sequence have the following sequence pair: SEQ ID NO:129 and 130, or SEQ ID NO:131 and 132, or SEQ ID NO:133 and 134, or SEQ ID NO:71 and 72, or SEQ ID NO:11 and 12.

9. A pharmaceutical composition for treating a disease or disorder associated with acute and chronic inflammation or a cancer, wherein the pharmaceutical composition comprises the antibody according to any one of claims 1-8 and a pharmaceutically acceptable carrier or excipient.

10. A method for treating a disease or disorder associated with acute and chronic inflammation or a cancer, comprising: administering to a subject in need thereof an effective amount of the antibody according to any one of claims 1-8.

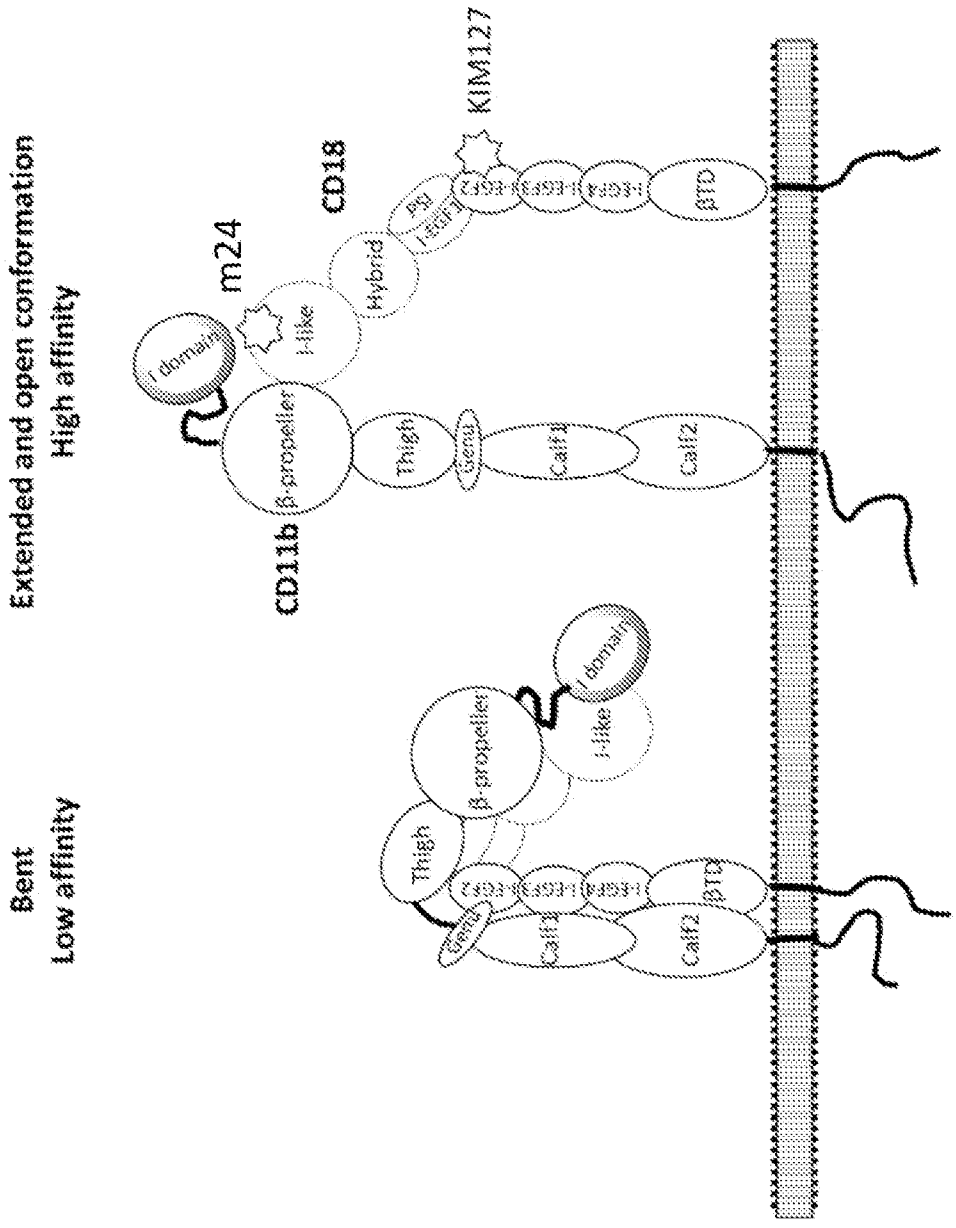

Extended and open conformation
High affinity
Bent
Low affinity
CD11b
CD18
m24
KIM127
I domain
I-like
β-propeller
Thigh
Genu
Calf1
Calf2
Hybrid
PSI
I-EGF1
I-EGF2
I-EGF3
I-EGF4
βTD

FIG. 1

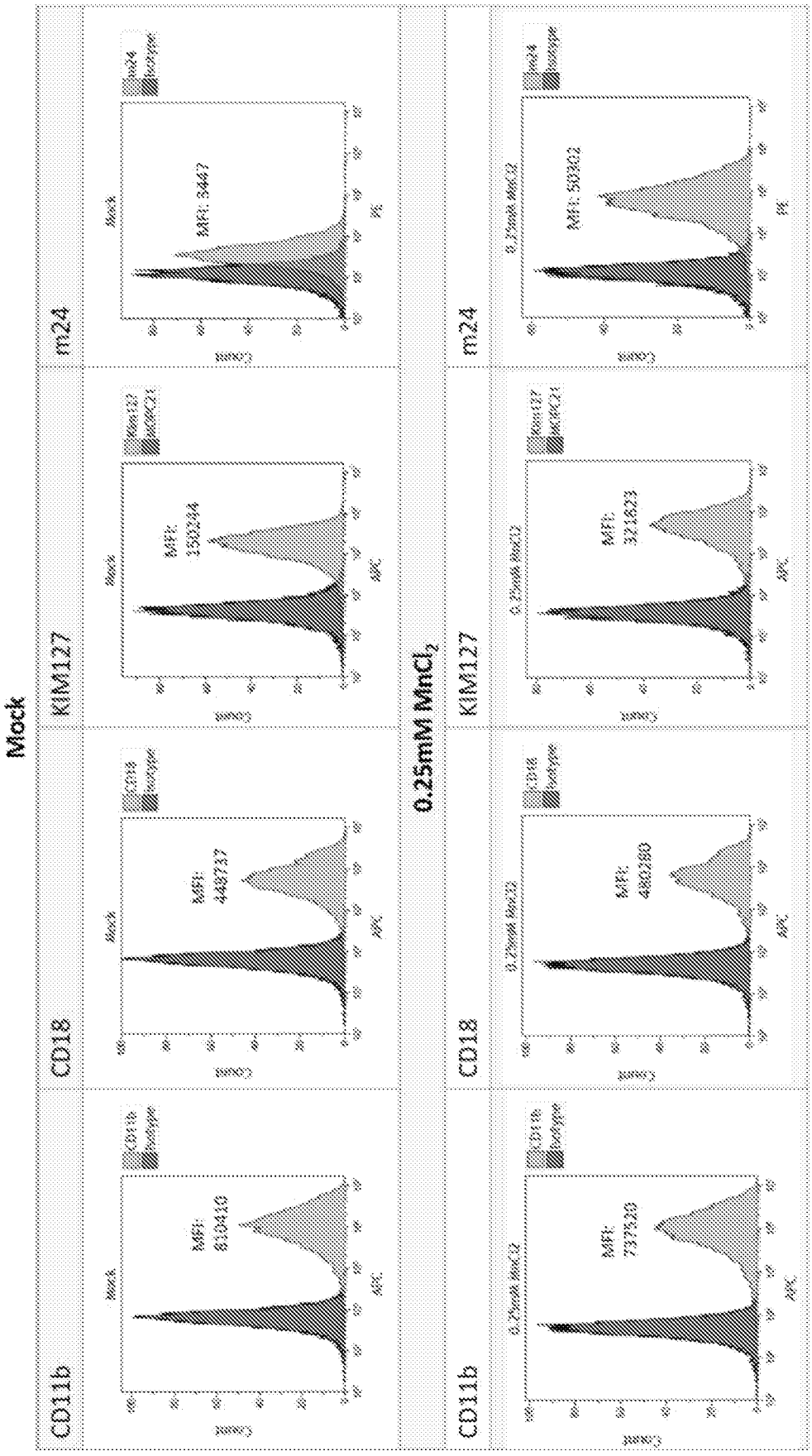

Mock
0.25mM MnCl2
CD11b
CD18
KIM127
m24
MFI: 810410
MFI: 448737
MFI: 150244
MFI: 3447
MFI: 737520
MFI: 480280
MFI: 321823
MFI: 50302
Count
APC
PE

FIG. 2

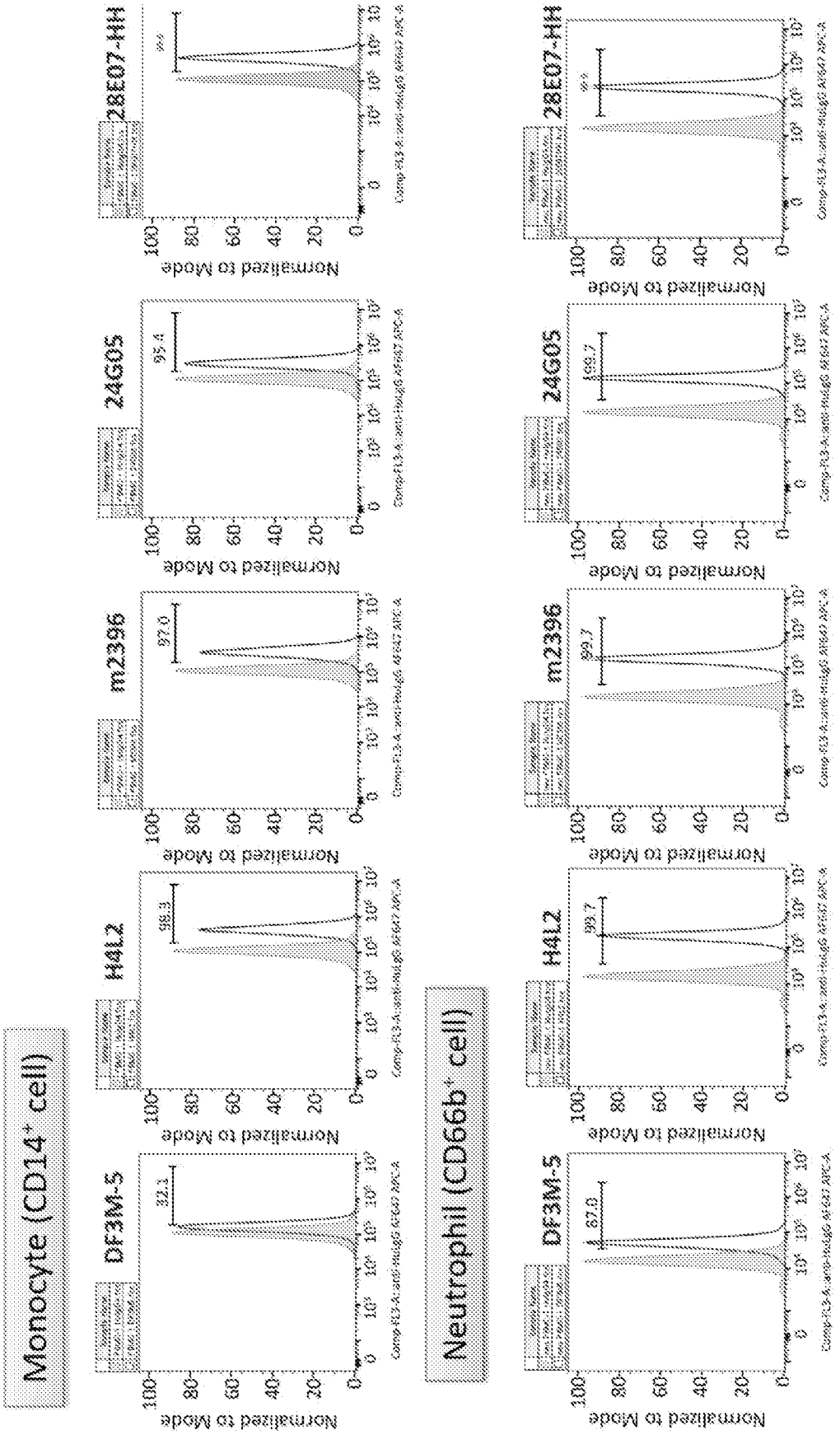

Monocyte (CD14+ cell)
Neutrophil (CD66b+ cell)
DF3M-5
H4L2
m2396
24G05
28E07-HH
Normalized to Mode
32.1
98.3
97.0
95.4
87.0
93.7
89.7
99.7
99.5

FIG. 3A

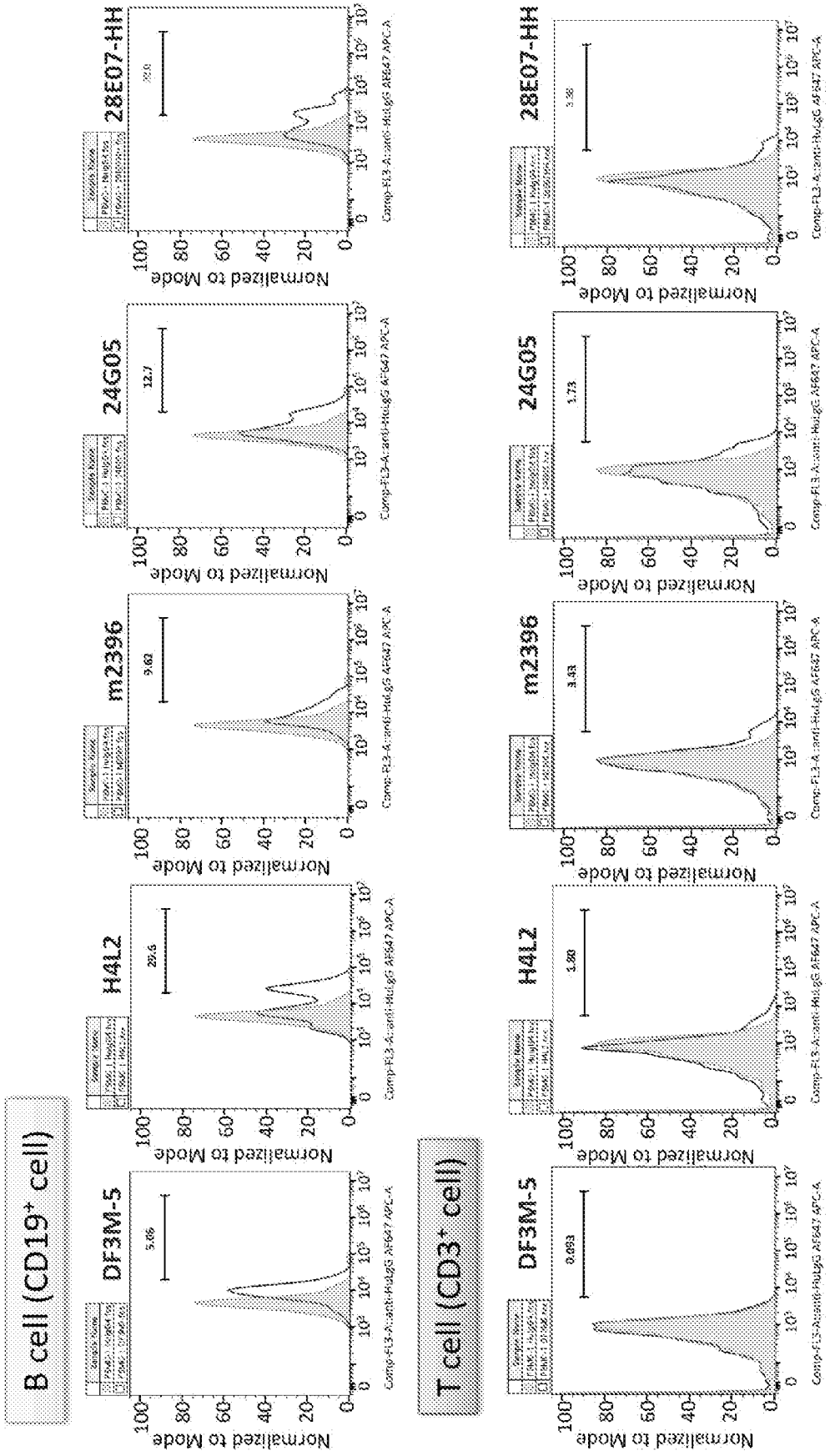


FIG. 3A (Continued)

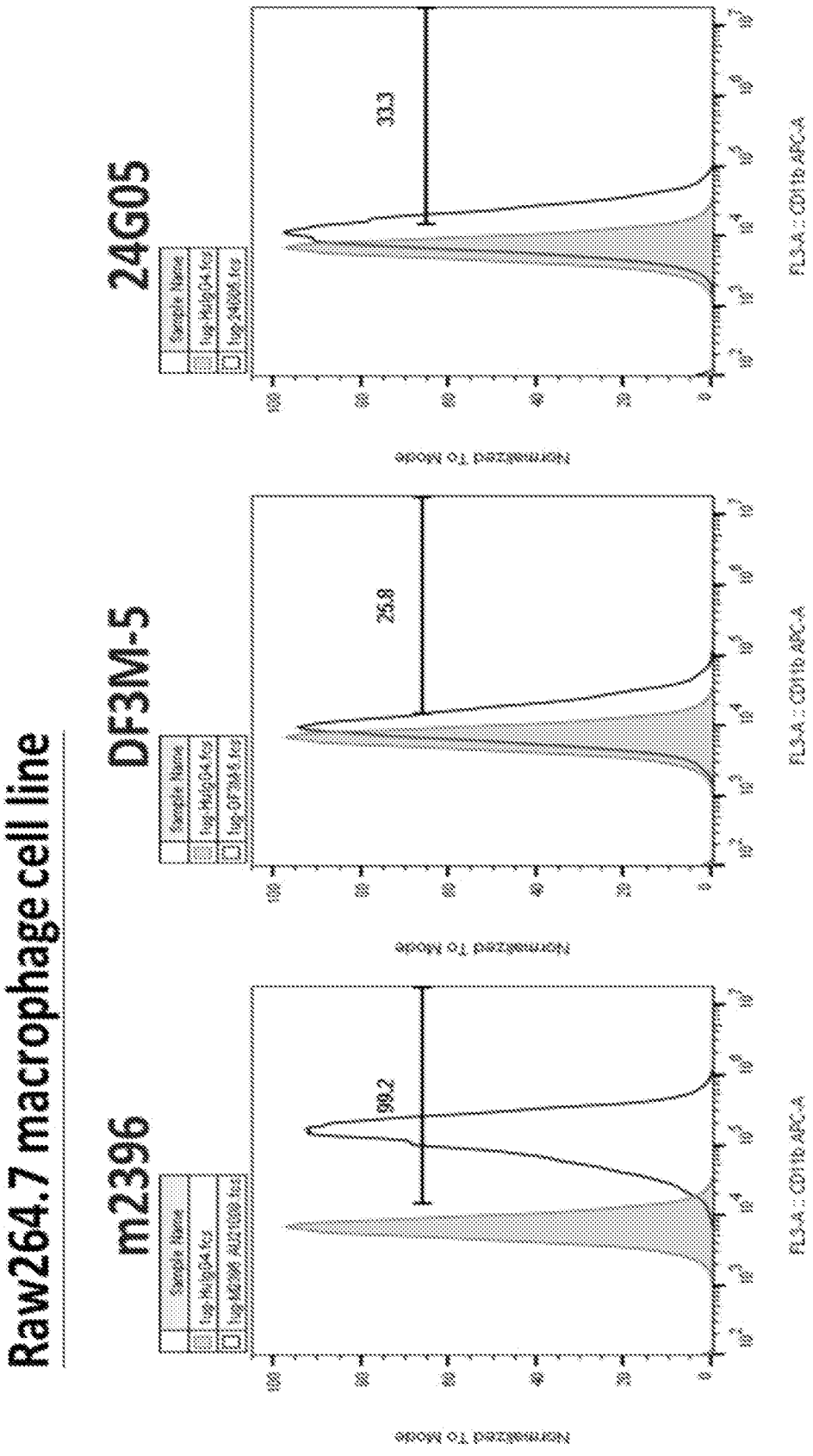

Raw264.7 macrophage cell line
m2396
DF3M-5
24G05
Sample Name
99.2
25.8
33.3
Normalized To Mode
FL3-A :: CD11b APC-A

FIG. 3B

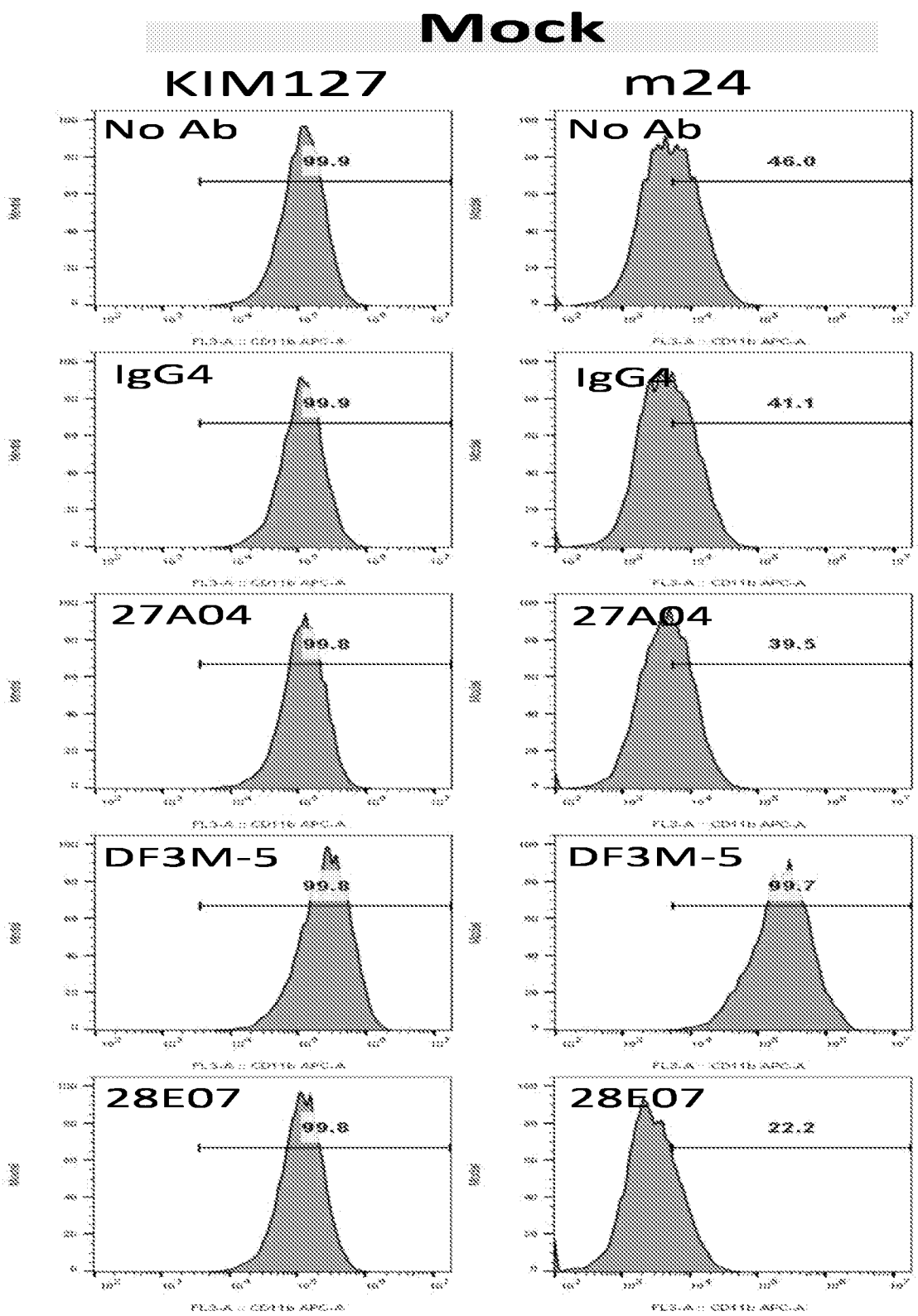

Mock
KIM127
m24
No Ab
99.9
No Ab
46.0
IgG4
99.9
IgG4
41.1
27A04
99.8
27A04
39.5
DF3M-5
99.8
DF3M-5
99.7
28E07
99.8
28E07
22.2

FIG. 4

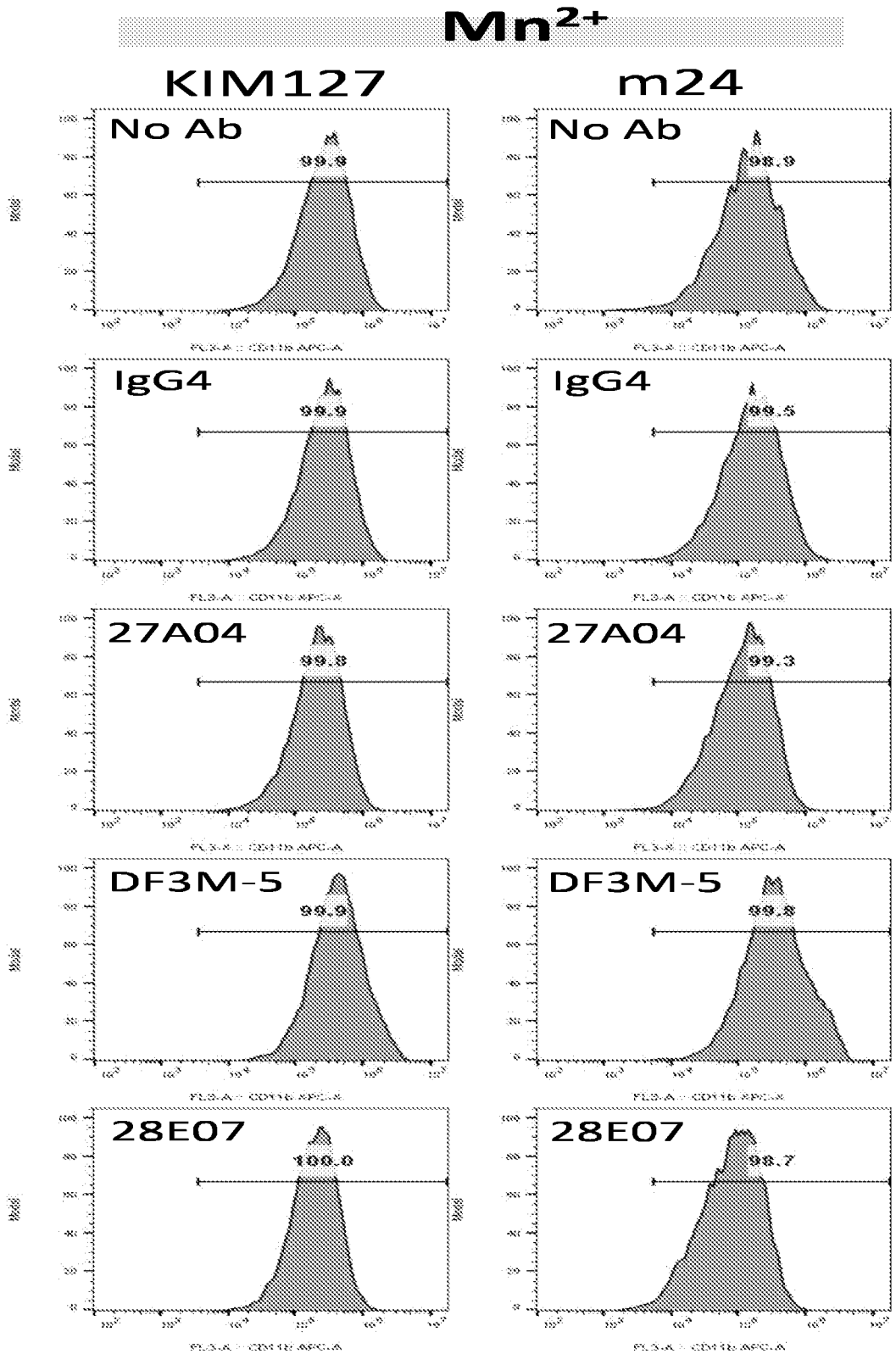


FIG. 4 (Continued)

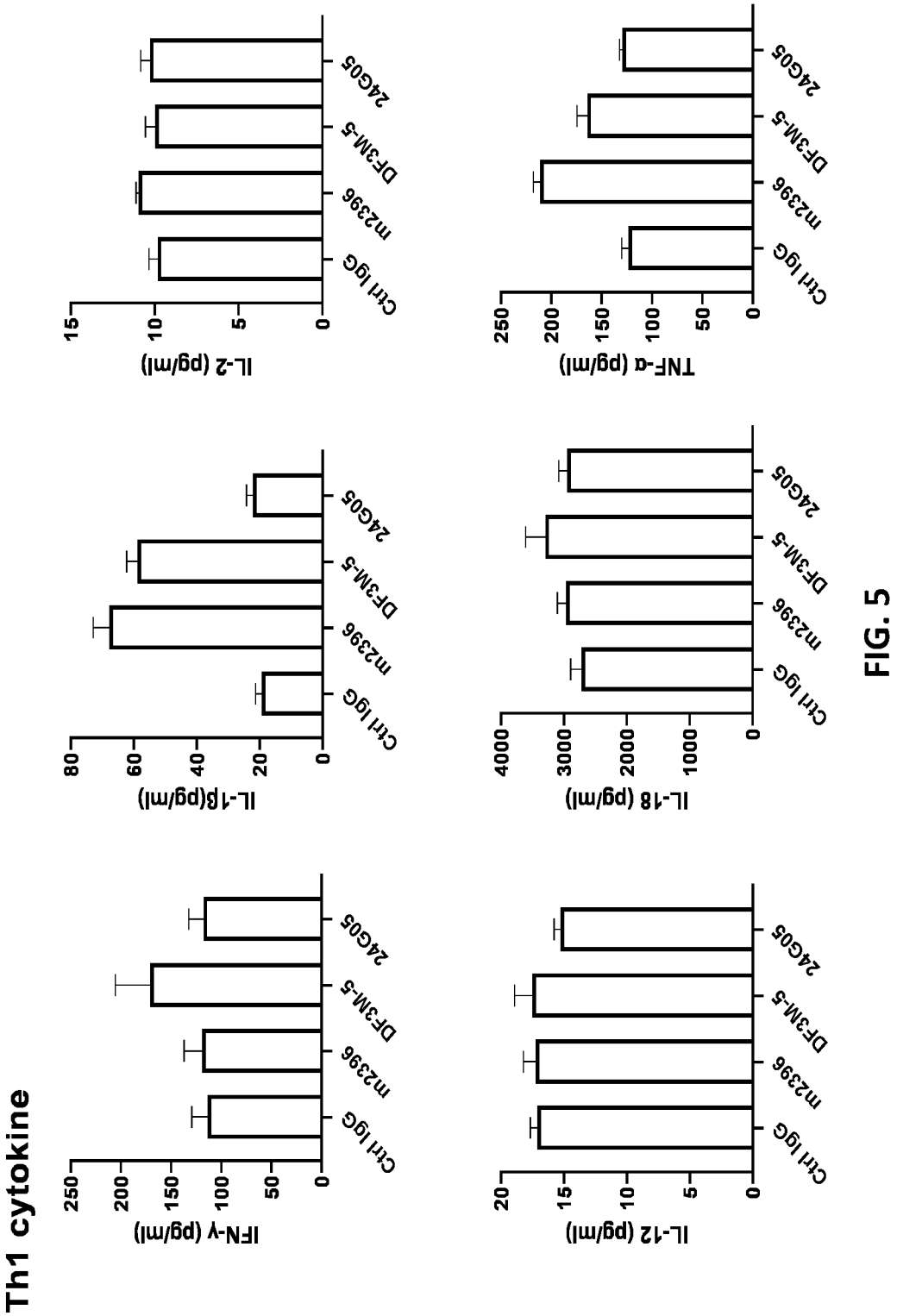

Th1 cytokine
IFN-γ (pg/ml)
IL-1β(pg/ml)
IL-2 (pg/ml)
IL-12 (pg/ml)
IL-18 (pg/ml)
TNF-α (pg/ml)
Ctrl IgG
m2396
DF-3M-5
24G05

FIG. 5

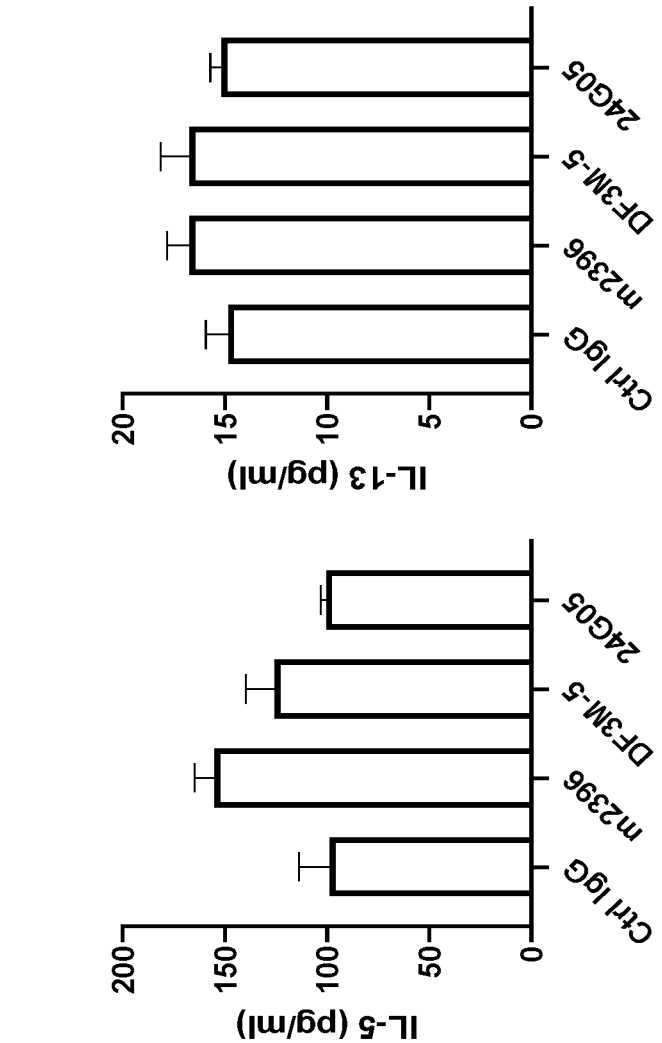


FIG. 5 (Continued)

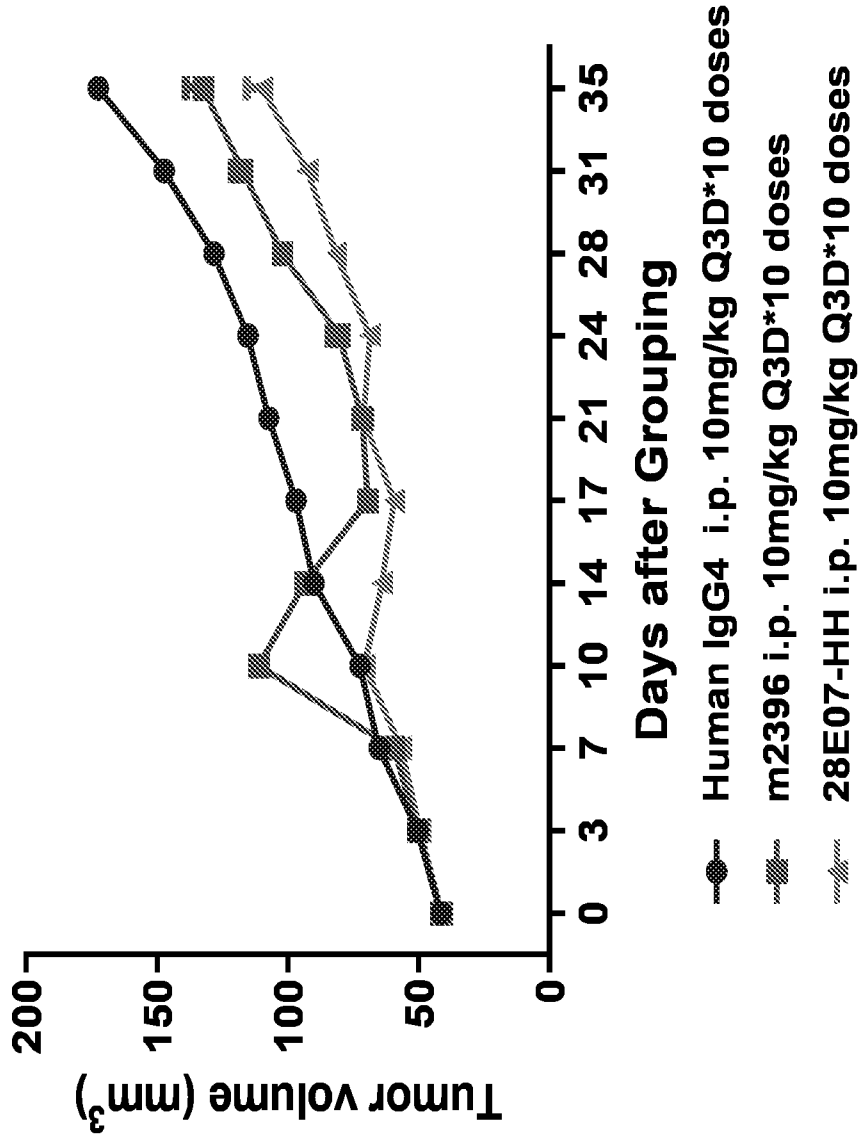

Tumor volume (mm3)
200
150
100
50
0
0 3 7 10 14 17 21 24 28 31 35
Days after Grouping
Human IgG4 i.p. 10mg/kg Q3D*10 doses
m2396 i.p. 10mg/kg Q3D*10 doses
28E07-HH i.p. 10mg/kg Q3D*10 doses

FIG. 6

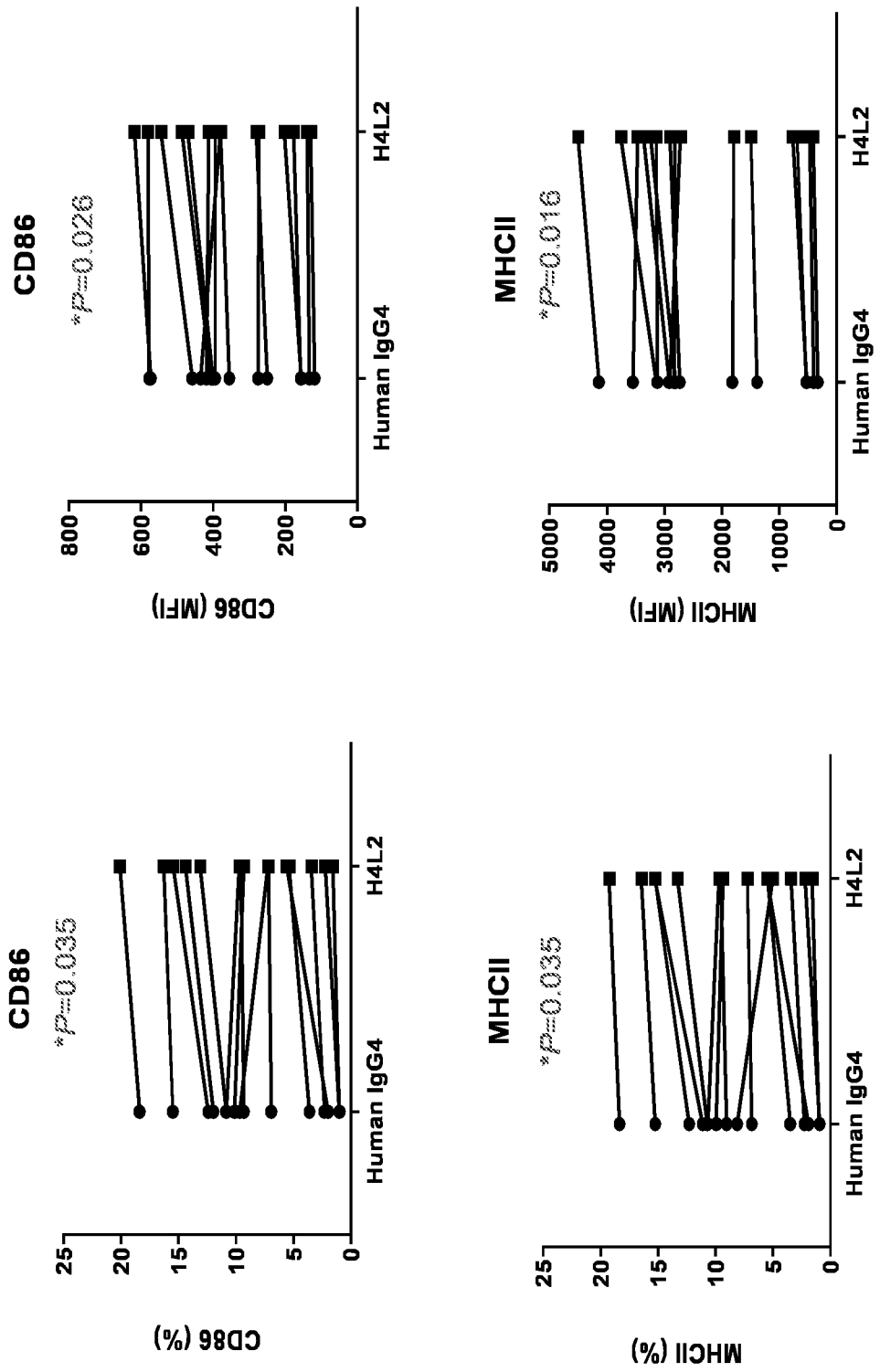
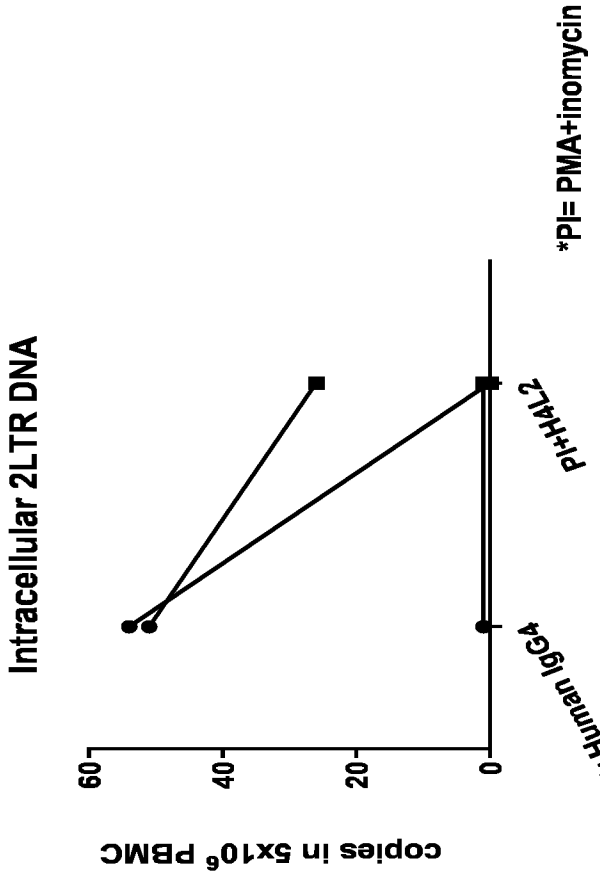

CD86
*p=0.026
CD86 (MFI)
800
600
400
200
0
Human IgG4
H4L2
MHCII
*p=0.016
MHCII (MFI)
5000
4000
3000
2000
1000
0
Human IgG4
H4L2
CD86
*p=0.035
CD86 (%)
25
20
15
10
5
0
Human IgG4
H4L2
MHCII
*p=0.035
MHCII (%)
25
20
15
10
5
0
Human IgG4
H4L2

FIG. 7A


Intracellular 2LTR DNA
copies in 5x10^6 PBMC
0
20
40
60
Human IgG4
H4L2
PI+Human IgG4
PI+H4L2
*PI= PMA+inomycin

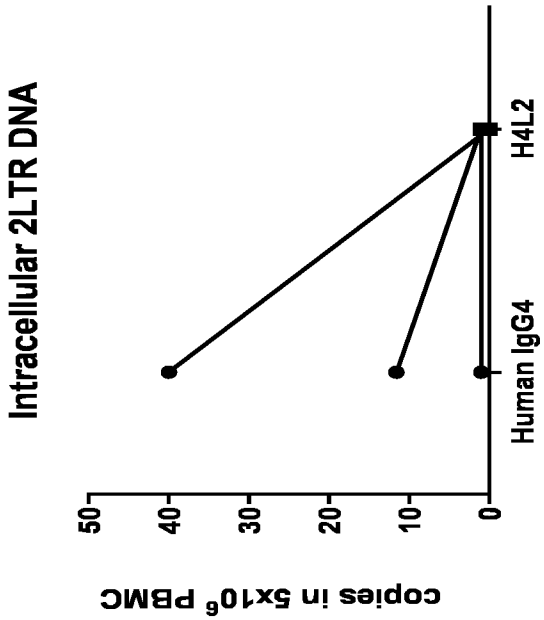

Intracellular 2LTR DNA
copies in 5x10^6 PBMC
0
10
20
30
40
50
Human IgG4
H4L2

FIG. 7B

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2021/065802

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61K 39/395; C07K 16/28 (2022.01)
CPC - A61K 2039/505; C07K 16/2845 (2022.05)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
see Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
see Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
see Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2016/0130326 A1 (NUMAB AG) 12 May 2016 (12.05.2016) entire document	1-4, 6, 7, 9, 10
A	US 2016/0108110 A1 (TRAUGER et al) 21 April 2016 (21.04.2016) entire document	1-4, 6, 7, 9, 10
A	US 2014/0147445 A1 (ZIRLIK et al) 29 May 2014 (29.05.2014) entire document	1-4, 6, 7, 9, 10

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"D" document cited by the applicant in the international application
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 May 2022	JUN 02 2022
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450 Facsimile No. 571-273-8300	Authorized officer Harry Kim Telephone No. PCT Helpdesk: 571-272-4300

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2021/065802

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.c of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of a sequence listing:

   a. ☒ forming part of the international application as filed:

      ☒ in the form of an Annex C/ST.25 text file.

      ☐ on paper or in the form of an image file.

   b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

      ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

2. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

SEQ ID NOs: 1, 2 and 4 were searched.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2021/065802

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See extra sheet(s).

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-4, 6, 7, 9, 10

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

Continued from Box No. III Observations where unity of invention is lacking

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees need to be paid.

Group I+: claims 1-10 are drawn to anti-Mac-1 antibodies.

The first invention of Group I+ is restricted to an antibody comprising a heavy chain variable region (VH) and a light chain variable region (VL), where the VH is selected to be SEQ ID NO:1, which further contains HCDR1 (SEQ ID NO:159), HCDR2 (SEQ ID NO:160), HCDR3 (SEQ ID NO:161), and where the VL is selected to be SEQ ID NO:4, which further contains LCDR1 (SEQ ID NO:168), LCDR2 (SEQ ID NO:169), and LCDR3 (SEQ ID NO:170). It is believed that claims 1-4, 6, 7, 9, and 10 read on this first named invention and thus these claims will be searched without fee to the extent that they read on SEQ ID NOs: 1 and 4.

Applicant is invited to elect additional antibody VH and VL, and their respective, corresponding, SEQ ID NOs to be searched in a specific combination by paying additional fee for each set of election. An exemplary election would be an antibody comprising a heavy chain variable region (VH) and a light chain variable region (VL), where the VH is selected to be SEQ ID NO:3, which further contains HCDR1 (SEQ ID NO:165), HCDR2 (SEQ ID NO:166), HCDR3 (SEQ ID NO:167), and where the VL is selected to be SEQ ID NO:6, which further contains LCDR1 (SEQ ID NO:174), LCDR2 (SEQ ID NO:175), and LCDR3 (SEQ ID NO:176). Additional antibody VH and VL, and their respective, corresponding, SEQ ID NOs will be searched upon the payment of additional fees. Applicants must specify the claims that read on any additional elected inventions. Applicants must further indicate, if applicable, the claims which read on the first named invention if different than what was indicated above for this group. Failure to clearly identify how any paid additional invention fees are to be applied to the "+" group(s) will result in only the first claimed invention to be searched/examined.

The inventions listed in Groups I+ do not relate to a single general inventive concept under PCT Rule 13.1, because under PCT Rule 13.2 they lack the same or corresponding special technical features for the following reasons:

The Groups I+ formulas do not share a significant structural element responsible for modulating immune cell function via Mac-1 binding, requiring the selection of alternative antibody VH and VL where "the heavy-chain variable region sequence is SEQ ID NO: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27,
29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, or 157; and the light-chain variable region sequence is SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, or 158."

Additionally, even if Groups I+ were considered to share the technical features of an antibody against human Mac-1, wherein the antibody binds to a specific state of human Mac-1 and modulates Th1 and/or Th2 cytokine secretions by TLR-activated immune cells. However, these shared technical features do not represent a contribution over the prior art.

Specifically, US 2014/0147445 A1 Baker Idi Heart & Diabetes Institute Holdings Ltd. et al. discloses an antibody against human Mac-1 (antibody specifically recognizing the CD40L binding site on the Mac-1 I-domain modulates leukocyte recruitment in vitro, Para. [0071]), wherein the antibody binds to a specific state of human Mac-1 (antibody specifically recognizing the CD40L binding site on the Mac-1 I-domain modulates leukocyte recruitment in vitro, Para. [0071]) and modulates Th1 and/or Th2 cytokine secretions by TLR-activated immune cells (On the other hand the more anti-inflammatory TH2 cytokine IL-10 tended to be elevated. An acute model was chosen since cytokine levels in atherosclerotic mice are hardly systemically regulated. Plasma levels of chemokines CXCL-1 and RANTES shifted towards a less inflammatory state, whereas protective IL-10 plasma levels tended to increase in cM7-treated mice. (d-e) Activation of leukocyte subsets was evaluated by quantifying the surface expression, Para. [0073]).

The inventions listed in Groups I+ therefore lack unity under Rule 13 because they do not share a same or corresponding special technical features.