Supplemental methods

Blood counts and analysis

Blood was collected by cardiac puncture in mice. Complete blood count (CBC) was measured by Hemavet 950FS (Drew Scientific). Percentage of neutrophils was analyzed by differential test. Absolute neutrophil count (ANC) were determined in peripheral blood by CBC and differential. Some samples were also analyzed by flow cytometry, with ACK lysing buffer (Gibco) used to lyse red blood cell prior to analysis of leukocyte markers, and neutrophils were identified as $CD45^+CD11b^+Ly6G^+$.[1]

Preparation of lung and marrow cell suspensions

For analysis of single cell lung suspensions, the right lung inferior lobe was minced and then digested with 5 mg/ml type I collagenase (Worthington) and 1 mg/ml DNAseI (Worthington) in RPMI1640 (Corning) at 37 ^oC for 45 min and subsequently passed through a 70 μm cell strainer. ACK lysing buffer (Gibco) was used for red blood cell lysis [1]. Bone marrow cells were flushed from the femurs, filtered through 70 μm cell strainer and red blood cells were lysed with ACK lysing buffer (Gibco). [2]

Bronchoalveolar lavage

Bronchoalveolar lavage (BAL) samples were obtained by three sequential one ml lavages with ice cold PBS with 2mM EDTA and 2% FBS. The 1st ml of BAL supernatant was frozen at -80^oC for ELISA. After red cell lysis with ACK lysis buffer (Gibco), pooled cells from all 3 ml were used to enumerate cell counts by hemocytometer and the leukocyte differential using Wright-Giemsa stained cytospins.

ELISA

BAL and plasma cytokines were analyzed using Mouse IL-1β ELISA kit, Mouse IL-6 ELISA kit, Mouse CXCL1 ELISA kit, Mouse CXCL2 ELISA kit and Mouse G-CSF ELISA kit (all from R&D systems).

Neutrophil depletion during zymosan-induced lung inflammation

Neutrophil depletion followed a double antibody-based protocol[3,4], as previously described[1]. Mice were injected IP with 200 μg Anti-Ly6G antibody (clone: 1A8, BioXcell) on days 0 and 2 and 100 μg Anti-Rat IgGk antibody (clone: MAR18.5, BioXcell) on day 1. Mice were challenged with 20 μg zymosan IN 4 hours after Anti-Ly6G antibody IP injection on day 2. Mice were euthanized 18 hours after zymosan challenge and evaluated for neutrophil depletion in peripheral blood obtained by cardiac puncture. White blood cell counts (WBC) were analyzed using a Hemavet and % of neutrophils was scored by Wright-Giemsa stained blood smears. [1]

Flow cytometry

BAL and lung single cell suspensions were incubated with anti-mouse CD16/32 (clone 2.4G2, BioXcell) to block Fc-receptors, and stained as outlined below. Data were collected on FACScan (BD) or LSRFortessa (BD) and analyzed by FlowJo (Tree Star Inc.).

For regular BAL and lung single cell staining: BV510 Rat anti-mouse CD45 antibody (clone 30-F11, BD Horizon), V450 Rat anti-mouse Ly6G antibody (clone 1A8, BD Horizon), PE-Cy7 Hamster anti-mouse CD11c antibody (clone HL3, BD Pharmingen), APC Rat anti-mouse CD11b antibody (clone M1/70, eBioscience), PE Rat anti-mouse siglec-F antibody (clone E50-2440, BD Pharmingen), PerCP/Cy5.5 Rat anti-mouse Ly-6C antibody (clone HK1.4, Biolegend). Gating strategy was as shown previously.[1] Neutrophils were identified as $CD45^+Ly6G^+CD11b^+$, and also confirmed by $CD45^+Ly6C^{int}CD11b^+$. Eosinophils and alveolar macrophages were identified as $CD45^+CD11c^-SiglecF^+$ and $CD45^+CD11c^+SiglecF^+$ respectively.

For pro-IL-1β intracellular staining: BV510 Rat anti-mouse CD45 antibody, V450 Rat anti-mouse Ly6G antibody, PE-Cy7 Hamster anti-mouse CD11c antibody, APC Rat anti-mouse CD11b antibody, PE Rat anti-mouse Siglec-F antibody, PerCP/Cy5.5 Rat anti-mouse Ly6C antibody, FITC Rat anti-mouse IL-1β (Pro-form) (clone NJTEN3, Invitrogen), FITC mouse IgG1, κ Isotype control (clone MOPC-21, BD Pharmingen). Neutrophils were identified as $CD45^+SiglecF^-CD11b^+Ly6G^+$, eosinophils and AMs were identified as $CD45^+SiglecF^+CD11c^-$ and $CD45^+SiglecF^+CD11c^+$ respectively, $Ly6C^{hi}$ monocytes were identified as $CD45^+SiglecF^-CD11b^+Ly6C^{hi}$, other cells were identified $CD45^+$ cells except neutrophils, eosinophils, AMs and $Ly6C^{hi}$ monocytes. Gating strategy is shown in Fig. S1A and S1D.

In neutrophil depletion experiments: BV510 Rat anti-mouse CD45 antibody, V450 Rat anti-mouse Ly6G antibody, PE-Cy7 Hamster anti-mouse CD11c antibody, PE Rat anti-mouse siglec-F antibody, PerCP/Cy5.5 Rat anti-mouse Ly-6C antibody. Neutrophils were identified as $CD45^+SiglecF^-Ly6C^{int}$, eosinophils and AMs were identified as $CD45^+SiglecF^+CD11c^-$ and $CD45^+SiglecF^+CD11c^+$ respectively, $Ly6C^{hi}$ monocytes were identified as $CD45^+SiglecF^-Ly6C^{hi}$. Gating strategy is shown in Fig. S1E.

For analysis of marrow granulopoiesis: PE-Cy7 Rat anti-mouse Gr-1 antibody (clone RB6-8C5, Invitrogen), PE-Cy7 Rat anti-mouse B220 antibody (clone RA3-6B2, Invitrogen), PE-Cy7 Rat anti-mouse TER-119 antibody (clone TER-119, Invitrogen), PE-Cy7 Hamster anti-mouse CD3e antibody (clone 145-2C11, BD Pharmigen), BV421 Rat anti-mouse c-Kit antibody (clone 2B8, Biolegend), APC-Cy7 Rat anti-mouse CD16/32 antibody (clone 93, Biolegend), PerCP-Cy5.5 Rat anti-mouse Sca-1 antibody (clone D7, Invitrogen), FITC Rat anti-mouse CD34 antibody (clone RAM34, Invitrogen). LSK cells ($Lin^-Sca^-1^+c\text{-}kit^+$), granulocytic-monocytic progenitors (GMP, $Lin^-Sca^-1\text{-}c\text{-}kit^+CD34^+CD16/32^+$), common myeloid progenitors (CMP, $Lin^-Sca\text{-}1^-c\text{-}kit^+CD34^+CD16/32^-$) and megakaryocyte-erythroid progenitors (MEP, $Lin^-Sca\text{-}1^-c\text{-}kit^+CD34^-CD16/32^-$) were determined by flow cytometry. Gating strategy is shown in Fig. S3A.

For analysis of committed neutrophil precursors: PE-Cy7 Rat anti-mouse B220 antibody, PE-Cy7 Rat anti-mouse TER-119 antibody, PE-Cy7 Hamster anti-mouse CD3e antibody, BV421 Rat anti-mouse c-Kit antibody, PE Rat anti-mouse Ly6G antibody (clone 1A8, BD Pharmingen), FITC Rat anti-mouse CD34 antibody. Myeloblast ($Lin^-c\text{-}Kit^{hi}Ly6G^-$), promyelocyte ($Lin^-c\text{-}Kit^{int}Ly6G^-$), myelocyte ($Lin^-c\text{-}Kit^-Ly6G^{low}$), metamyelocyte ($Lin^-c\text{-}Kit^-Ly6G^{int}$), and $Ly6G^{hi}$ PMN neutrophil ($Lin^-c\text{-}Kit^-Ly6G^{hi}$) were identified by flow cytometry. Gating strategy is shown in Fig. S3B.

For CD101 staining experiments: BV510 Rat anti-mouse CD45 antibody, V450 Rat anti-mouse Ly6G antibody, AF-647 Rat anti-mouse CD101 antibody (clone 307707, BD Pharmingen), PE Rat anti-mouse CD11b antibody (clone M1/70, eBioscience). $CD101^{neg}$

neutrophils ($CD45^+CD11b^+Ly6G^+CD101^-$) and $CD101^{pos}$ neutrophils ($CD45^+CD11b^+Ly6G^{hi}CD101^+$) were identified by flow cytometry. As naive mice have a very low content of $CD101^{neg}$ lung neutrophils, we studied only $Ly6G^+CD11b^+$ $CD101^{pos}$ neutrophils from this group. Gating strategy for different tissues is shown in Fig. S4.

Histology and Immunohistochemistry

In some experiments, the left lung was fixed by inflation using 10% formalin, dehydrated by ethanol, embedded in paraffin, and cut into 5 μm sections for analysis of histology, as previously described. [1] Tissue sections were stained with H&E. For immunohistochemistry, tissue sections underwent antigen retrieval with Antigen unmasking solution (Vector Laboratories) with the manufacture's protocol, and then were blocked with 2% gelatin from cold water fish skin (Sigma-Aldrich) for 1 hour at room temperature, incubated with a 1/500 dilution of Rabbit anti-mouse myeloperoxidase antibody (ab139748, Abcam) at 4°C overnight, followed by incubation with biotinylated goat anti-rabbit antibody (1/500 dilution for 1 hour at room temperature, Vector Laboratories) and detected by VECTASTAIN ABC kit (Vector Laboratories) and DAB peroxidase substrate kit (Vector Laboratories). Sections were counterstained with hematoxylin (Gill's formula, Vector Laboratories). The images were captured with NanoZoomer digital slice scanner (Hamamatsu Photonics, Japan). Images were analyzed by NDP.view2 software (Hamamatsu Photonics).

Immunofluorescence

Formalin fixed, paraffin embedded lung tissue sections underwent antigen retrieval with Antigen unmasking solution (Vector Laboratories) with the manufacture's protocol, and then were blocked with 2% gelatin from cold water fish skin (Sigma-Aldrich) for 1 hour at room temperature, incubated with 1/100 dilution of goat anti-mouse IL-1β antibody (Cat # AF-401-NA, R&D systems) and Rat anti-mouse Ly6G antibody (clone 1A8, Invitrogen) at 4°C overnight, followed by incubation with 1/500 dilution of AF488 donkey anti-goat IgG (Cat # A11055, Invitrogen) and 1/500 dilution of AF594 donkey anti-rat IgG (Cat # A21209, Invitrogen) for 1 hour at room temperature. 1 μg/ml DAPI (Cat # 10236276001, Roche) was used for nuclear counterstaining. ProLong Gold antifade reagent (Cat # P36930, Invitrogen) was used as mounting media. Images were acquired by Zeiss Axio Imager M2 upright fluorescence microscope (Carl Zeiss Inc.), using an EC Plan-Neofluar 20X (NA 0.5) air objective (Carl Zeiss) with an ORCA-Flash 4.0 digital camera (Hammamatsu Photonics, Japan), and by ZEN 2 pro (blue edition) software for (Carl Zeiss) or acquired by Zeiss Axio Observer D1 inverted fluorescence microscope (Carl Zeiss Inc. Thornwood, NY), using an EC Plan-Neofluar 20X (NA 0.5) air objective (Carl Zeiss) with an Axiocam 503 dual color B/W digital camera (Carl Zeiss), and by ZEN 2.3 (blue edition) software. Images were further processed and analyzed using ImageJ (National Institutes of Health).

qPCR

RNA from lung tissues was extracted with RNAeasy Plus Mini Kit (Cat # 74136, Qiagen). cDNA was synthesized by High-Capacity cDNA Reverse Transcription Kit (Cat # 4368813, Applied Biosystems). qPCR was performed using TaqMan Fast Universal PCR Master Mix (Cat # 4352042, Applied Biosystems) on a 7500 Fast Real-Time PCR system (Applied Biosystems) with the following primers purchased from Thermo Fisher: Csf3 Mm00438335_g1, Il6 Mm00446190_m1, Cxcl1 Mm04207460_m1, Cxcl2 Mm00436450_m1 and Gapdh

Mm99999915_g1. Gapdh were used to normalize the expression of target genes as an internal control.

RNA-sequencing and analysis.

RNA was prepared from sorted live (7-AAD-negative) neutrophils from lung single-cell suspensions. Neutrophils were identified as Live (7-AAD-negative) $CD45^+CD11b^+Ly6G^+$ along with CD101, and sorted as $CD45^+CD11b^+Ly6G^+CD101^{neg}$ or $CD45^+CD11b^+Ly6G^+CD101^{pos}$ cells on the FACSAria Fusion cell sorter (BD). 50,000-200,000 cells/sample were sorted into RPMI1640 + 20% heat-inactivated FBS, and each group had three replicate samples. Total RNA was isolated using RNeasy Plus Micro Kit (Qiagen). All samples showed RNA integrity (RIN) of > 9.7. RNA-seq libraries were prepared using the Clontech SMARTer Kit. Samples were prepared according to library kit manufacturer's protocol, indexed, pooled, and sequenced on an Illumina NovaSeq 6000. RNA-seq reads were aligned to the Ensembl release 76 primary assembly for mouse. Ribosomal genes and genes not expressed in the smallest group size minus one samples greater than one count-per-million were excluded from further analysis. The TMM size factors and the matrix of counts were then imported into the R/Bioconductor package Limma. [5] Linear modeling (limma/voom) was used to compare gene expression across samples. Differential expression analysis was performed to analyze for differences between conditions and the results were filtered for only those genes with Benjamini-Hochberg false-discovery rate adjusted p-values less than or equal to 0.05. Heatmaps and Venn diagrams were created using R. Hallmark gene sets [6] were analyzed using generally applicable gene set enrichment (GAGE). [7]

References

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7. Luo W, Friedman MS, Shedden K, Hankenson KD, Woolf PJ. GAGE: generally applicable gene set enrichment for pathway analysis. *BMC Bioinformatics*. 2009;10:161.

Fig. S1. Zymosan-induced lung inflammation in WT and CGD mice and flow cytometry analysis of pro IL-1β+ cells and of antibody-mediated neutrophil depletion.

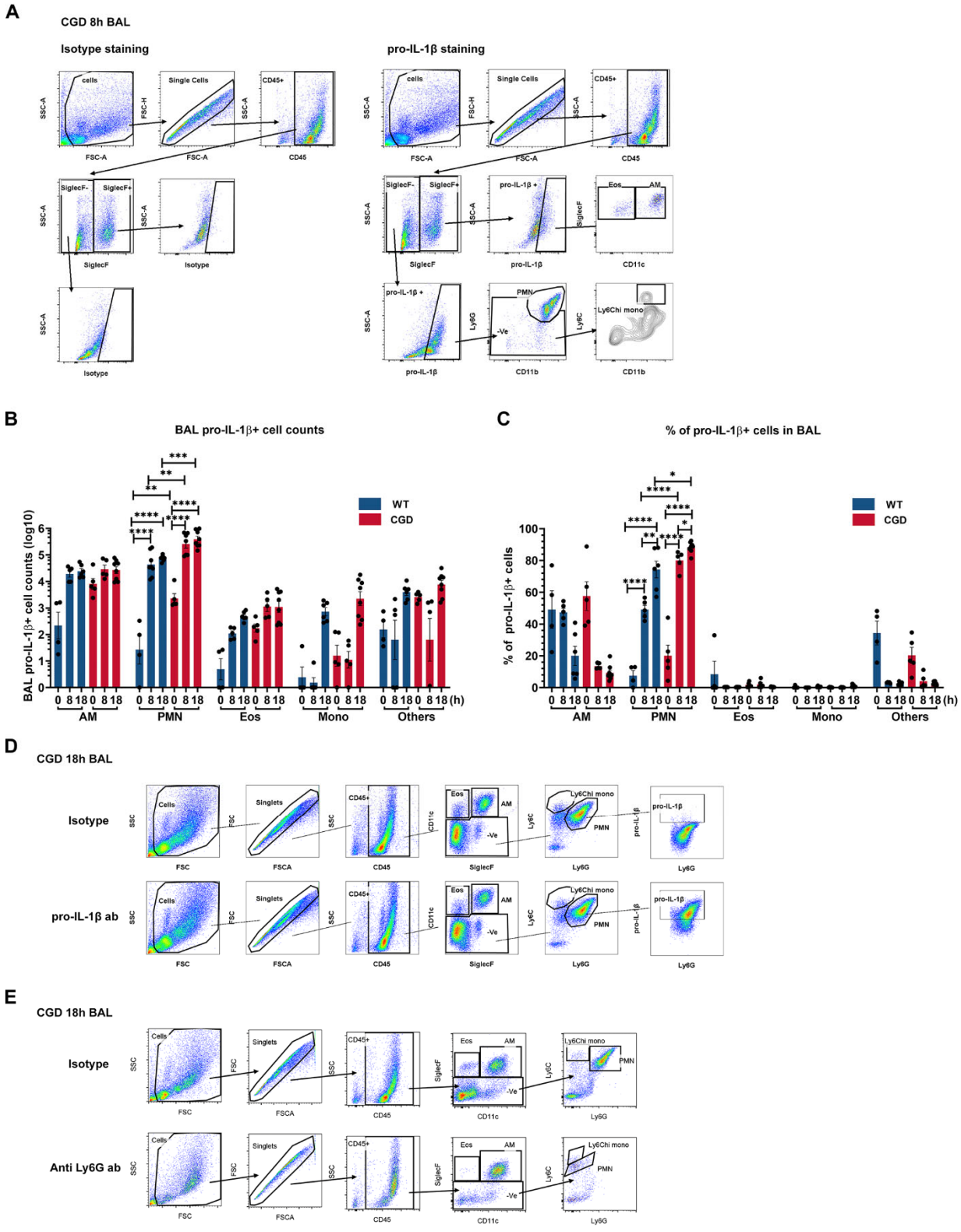

Fig. S1. WT and CGD mice were challenged with 20 μg intranasal zymosan. BAL samples were collected at different time points and used for further analysis. (A) Representative gating strategy for identifying pro-IL-1β^{+} cell composition in BAL at 8 hours after 20 μg zymosan IN challenge. Due to high autofluorescence of alveolar macrophages (AMs), CD45^{+} cells were firstly gated as SiglecF^{-} and SiglecF^{+} population, then Pro IL-1β^{+} cells were further gated from each population. Upper panel, gating from Isotype control staining. Lower panel, gating from Pro-IL-1β staining. Percentage of pro-IL-1β^{+} cells from CD45^{+} cells was calculated by adding up the percentage of SiglecF^{+} pro-IL-1β^{+} and SiglecF^{-} pro-IL-1β^{+} cells from CD45^{+} cells. Percentage of each cell population from CD45^{+}pro-IL-1β^{+} cells were further calculated using flow cytometry results. This gating is related to Figure 1C, Figure S1B and S1C. (B) BAL counts of pro-IL-1β^{+} AMs, neutrophils, eosinophils, Ly6C^{hi} monocytes, and remaining other cells were calculated from flow cytometry results for the percentage of pro-IL-1β^{+} AMs, neutrophils, eosinophils, Ly6C^{hi} monocytes, and other cells. (C) Percentage of pro-IL-1β^{+}AMs, neutrophils, eosinophils, Ly6Chi monocytes, and others (CD45^{+}SiglecF^{-}Ly6G^{-}Ly6C^{low-} cells not further characterized) were determined by flow cytometry. (D) Representative flow cytometry gating of BAL pro-IL-1β^{+} neutrophils from total neutrophils. Neutrophils were identified as CD45^{+}SiglecF^{-}Ly6G^{+}Ly6C^{int}, eosinophils and AMs were identified as CD45^{+}SiglecF^{+}CD11c^{-} and CD45^{+}SiglecF^{+}CD11c^{+} respectively, Ly6C^{hi} monocytes were identified as CD45^{+}SiglecF^{-}Ly6G^{-}Ly6C^{hi}. This gating is related to Figure 1D and 1E. (E) Representative figure of flow cytometry gating of BAL cells to assess neutrophil depletion. Mice were sequentially injected IP with anti Ly6G or isotype and anti-Rat Kappa light chain prior to lung challenge with zymosan. Cell composition was determined by flow cytometry. Neutrophils were identified as CD45^{+}SiglecF^{-}Ly6C^{int}, eosinophils and AMs were identified as CD45^{+}SiglecF^{+}CD11c^{-} and CD45^{+}SiglecF^{+}CD11c^{+} respectively, Ly6C^{hi} monocytes were identified as CD45^{+}SiglecF^{-}Ly6C^{hi}.

Fig. S2. IL-1β neutralization does not affect zymosan-induced lung inflammation in CGD mice at 8 hours.

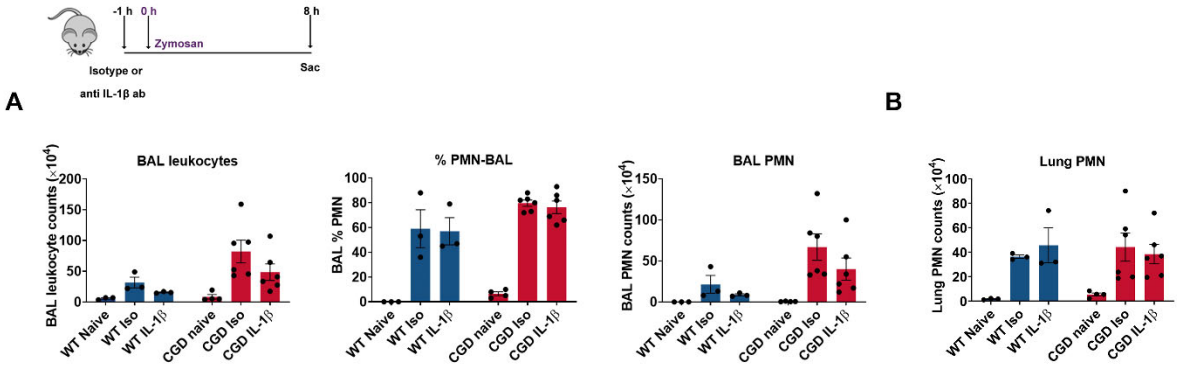

Fig. S2. (A-B) WT and CGD mice were injected intraperitoneally with anti-IL-1β ab or isotype, followed by IN instillation of 20 μg zymosan after 1 hour. BAL and lung tissue were collected at 8 hours after zymosan challenge. (A) Total leukocyte counts from 3 ml BAL fluid. The percentage of neutrophils were identified by cytospin. BAL PMN counts were calculated by cytospin results. (B) Lung cells were counted from the right inferior lobe. PMN ($CD45^+CD11b^+Ly6G^+$) counts were calculated by flow cytometry. WT, n ≥ 3 from 1 or more experiments; CGD, n ≥ 4 from 2 independent experiments. Data are means ± standard error of the mean.

Fig. S3. Flow cytometry analysis of granulopoiesis and neutrophil precursors in the marrow in zymosan-induced lung inflammation.

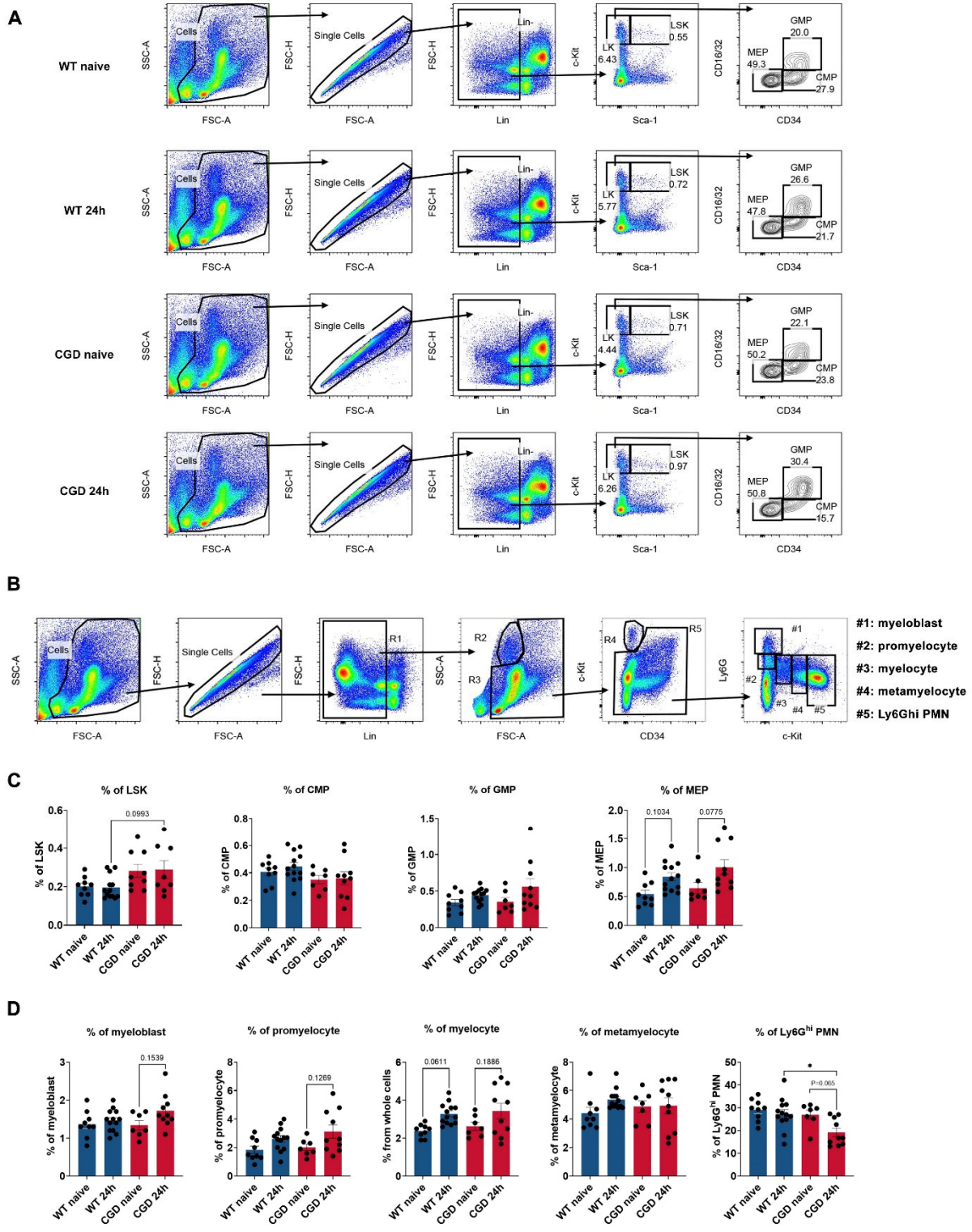

Fig. S3. WT and CGD mice were challenged with 20 μg IN zymosan. Bone marrow cells were collected from naïve WT and CGD mice and at 24 hrs from mice challenged with 20 μg intranasal zymosan. (A) Representative flow cytometry gating to identify different hematopoietic progenitors in naïve mice and zymosan challenged mice. Lineage makers were CD3, B220, TER-119 and Gr-1. (B) Representative flow cytometry showing gating to identify differentiation and maturation stages of marrow granulocytes in mice. #1, myeloblast; #2, promyelocyte; #3, myelocyte ; #4, metamyelocyte ; #5, $Ly6G^{hi}$ neutrophil. (C) Percentage of LSK cells,common myeloid progenitors (CMP), granulocytic-monocytic progenitors (GMP) and megakaryocyte-erythroid progenitors (MEP) were determined by flow cytometry. (D) Percentage of myeloblast, promyelocyte, myelocyte, metamyelocyte and $Ly6G^{hi}$ PMN were determined by flow cytometry.

Fig. S4. Gating strategy to identify CD101^{neg}Ly6G^{+}CD11b^{+} neutrophils in various tissues.

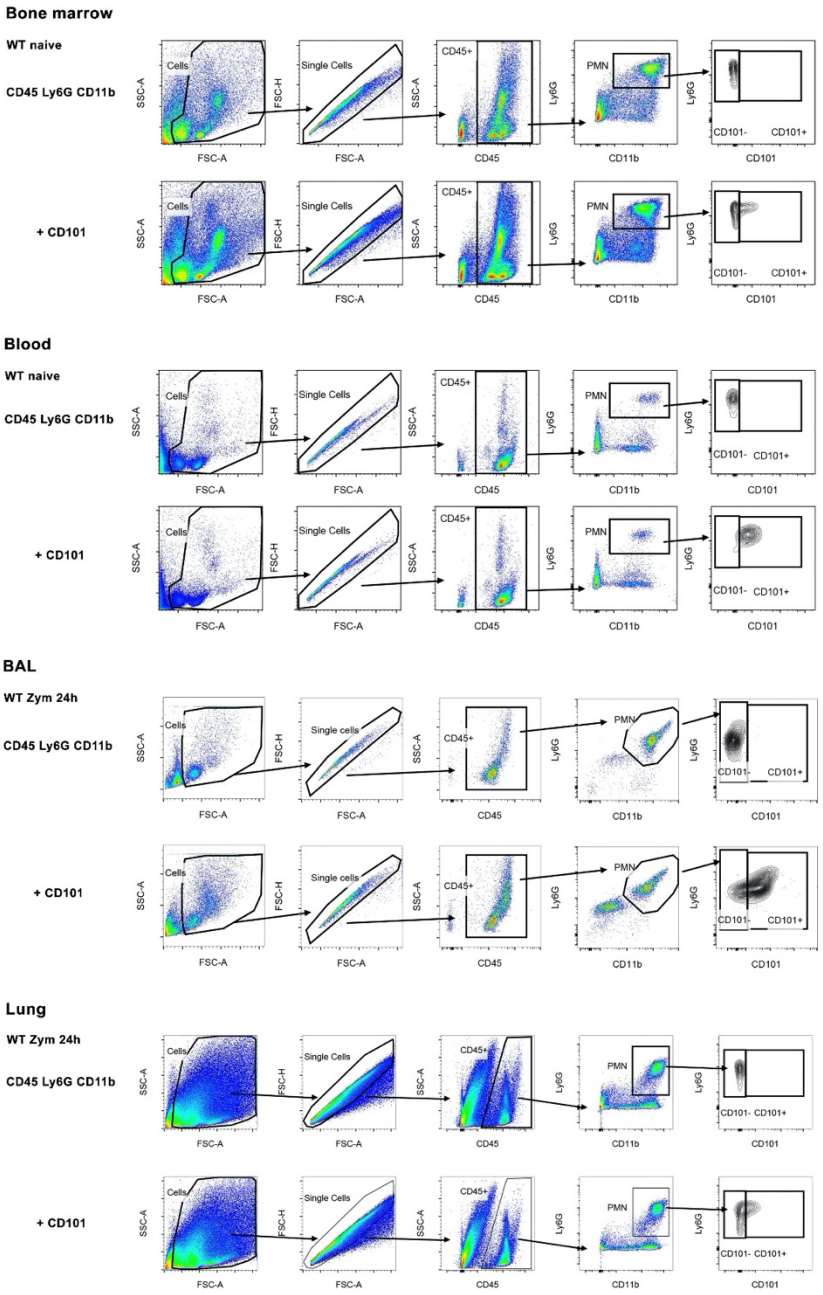

Fig. S4. Representative flow cytometry gating to identify CD101^{neg}Ly6G^{+}CD11b^{+} neutrophils in the indicated tissues (bone marrow, blood, BAL and lung), showing examples from either naive WT mice or WT challenged with 20 µg IN zymosan and samples collected 24 hours later. CD101 expression on CD11b^{+}Ly6G^{+} PMN were analyzed by flow cytometry and showed CD101^{neg} PMN (CD45^{+}CD11b^{+}Ly6G^{+}CD101^{neg}) and CD101^{pos} PMN (CD45^{+}CD11b^{+}Ly6G^{+}CD101^{pos}) populations.

Fig. S5. Role of IL-1β and LTB4 production on granulopoiesis and peripheral blood immature neutrophils following zymosan lung challenge in CGD mice.

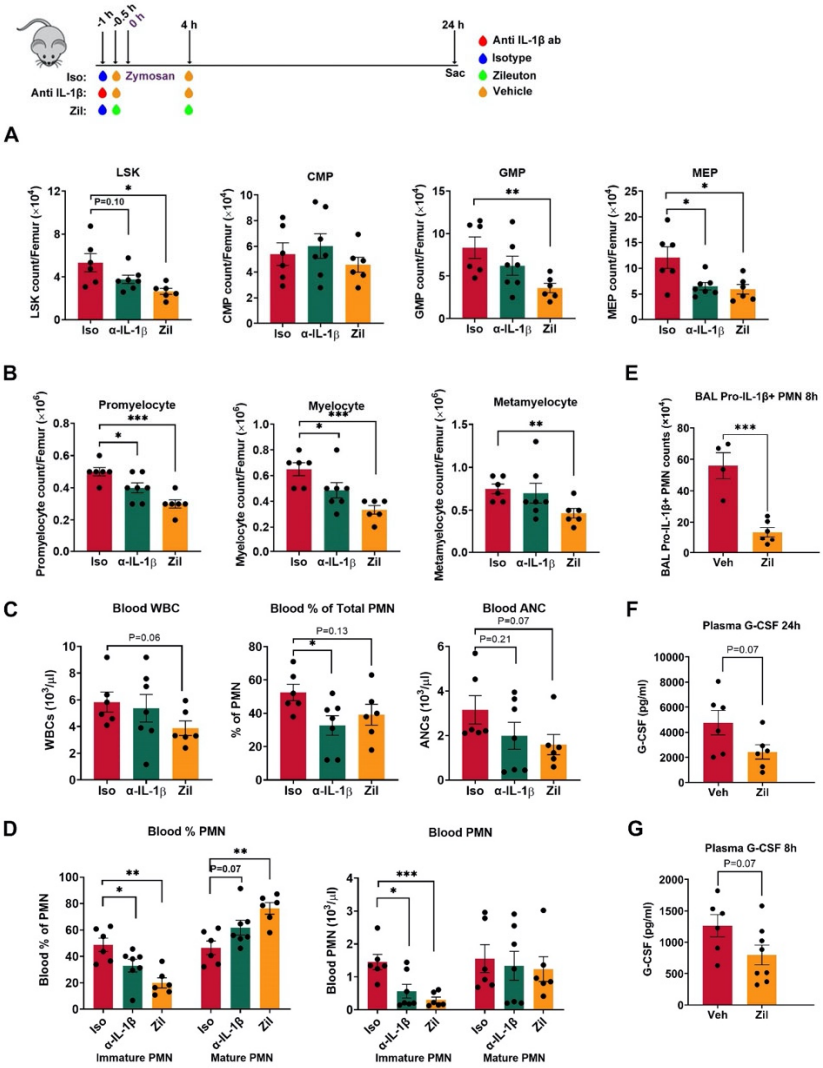

Fig. S5. (A-D) CGD mice were injected intraperitoneally with anti Il-1β ab or isotype 1 hour before 20 μg zymosan challenge, or treated with zileuton or vehicle 30 minutes before and 4 hours after zymosan challenge, and studied at 24 hours. (A) LSK cells, CMP, GMP and MEP counts per femur were calculated by flow cytometry results. (B) Promyelocyte, myelocyte and metamyelocyte counts per femur were calculated by flow cytometry results. (C) Total WBC, percentage of PMN, and absolute neutrophil count (ANC) were determined in peripheral blood by complete blood count and differential. (D) Peripheral blood immature $CD101^{neg}$ PMN and mature $CD101^{pos}$ PMN were determined by flow cytometry, and immature PMN and mature PMN counts were calculated by flow cytometry results. (E-G) CGD mice were treated with

zileuton or vehicle 30 minutes before and 4 hours after 20 μg zymosan challenge and studied at 8 hours or 24 hours. (E) Pro-IL-1β+ PMN counts were calculated from flow cytometry results. (F-G) G-CSF level in plasma were determined by ELISA. (A-E) n ≥ 6 from 2 independent experiments. (F) n ≥ 4 from 2 independent experiments. (G) n ≥ 6 from 3 independent experiments. Data are means ± standard error of the mean. *P < 0.05; **P < 0.01; ***P < 0.001, by student t test.

Fig. S6. Transcriptomic analysis of lung neutrophils in WT and CGD mice.

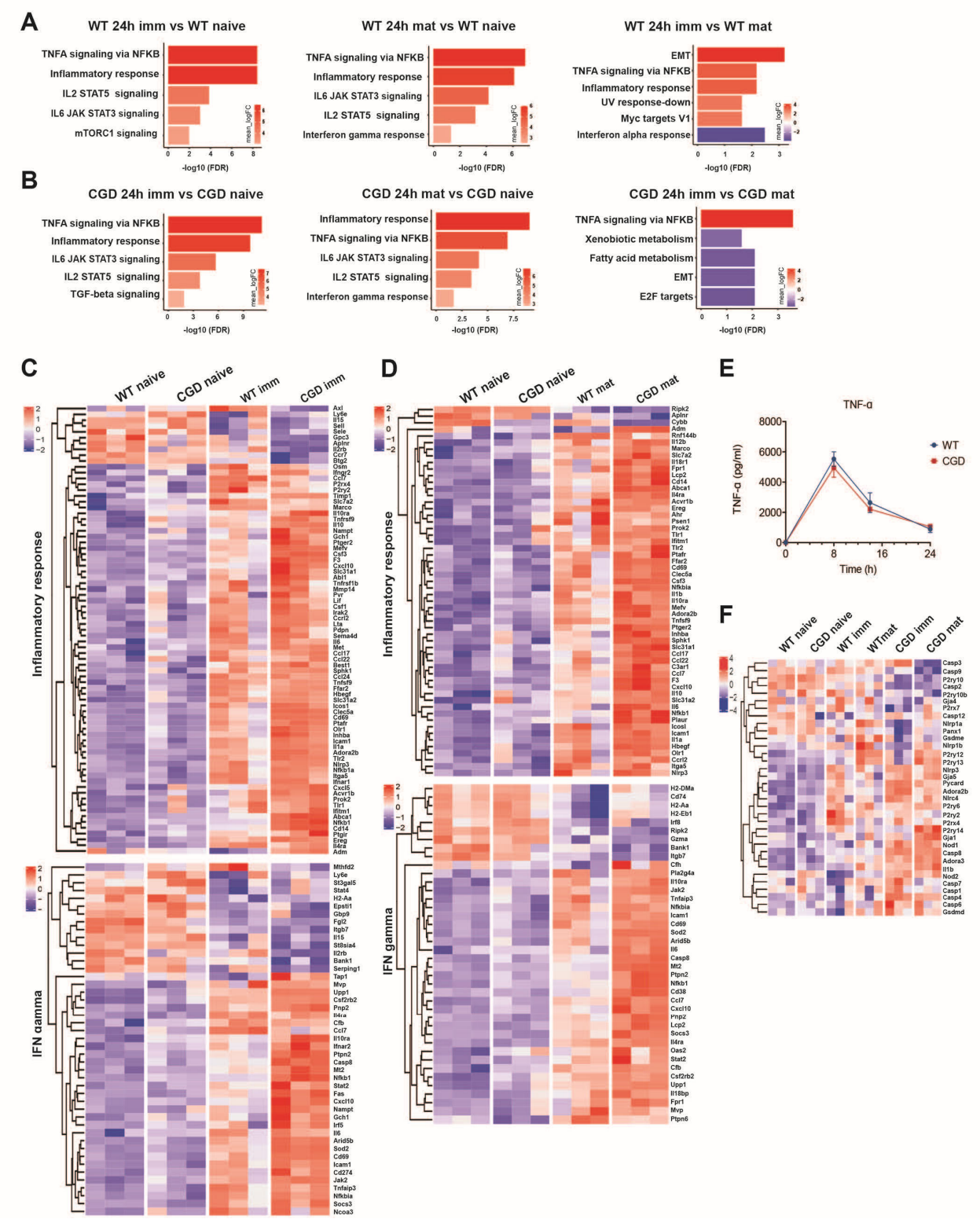

Fig. S6. (A-B) Hallmark gene sets analyzed using GAGE between the indicated different comparison pairs. (C) Heat map of genes (limma/voom-normalized) that are expressed differentially between WT naive neutrophils and WT immature neutrophils, CGD naive neutrophils and CGD immature neutrophils in the lung from “Hallmark” pathways analyzed using GAGE. (D) Heat map of genes (limma/voom-normalized) that are expressed differentially between WT naive neutrophils and WT mature neutrophils, CGD naive neutrophils and CGD mature neutrophils in the lung from Hallmark gene sets analyzed using GAGE. (E) TNF-α level in 1st ml BAL of zymosan challenged mice were determined by ELISA. n ≥ 2 in each group from more than 2 independent experiments. Data are means ± standard error of the mean. (F) Expression of genes (limma/voom-normalized) related to IL-1β production.

Supplementary Table 1.

Gene list of the 500 most differentially expressed genes generated between CGD and WT immature neutrophils (corresponding to Figure 7E).

Genes are ordered by hierarchical clustering, in the same order as in Figure. 7E. Gene ID, gene name, log Fold change (FC) and Adjusted P Value are provided. Log FC > 0 means up-regulated genes in CGD immature PMNs compared to WT immature PMNs; Log FC < 0 means down-regulated genes in CGD immature PMNs compared to WT immature PMNs.

Number	Gene ID	Gene name	CGD imm PMN VS WT imm PMN logFC	CGD imm PMN VS WT imm PMN Adj P.Value
1	ENSMUSG00000040430	Pitpnc1	0.8510	1.66E-04
2	ENSMUSG00000026249	Serpine2	2.2750	6.15E-05
3	ENSMUSG00000058056	Palld	2.1392	1.03E-04
4	ENSMUSG00000068040	Tm9sf4	1.2565	2.85E-04
5	ENSMUSG00000017132	Cyth1	1.3082	4.84E-05
6	ENSMUSG00000002257	Def6	1.1189	1.22E-04
7	ENSMUSG00000055652	Klhl25	1.1784	2.38E-05
8	ENSMUSG00000028412	Slc44a1	1.8307	8.65E-06
9	ENSMUSG00000037822	Smim14	0.8533	2.36E-04
10	ENSMUSG00000005533	Igf1r	1.2086	1.22E-04
11	ENSMUSG00000029723	Tsc22d4	1.2735	4.88E-05
12	ENSMUSG00000030788	Rnf141	1.0958	3.50E-05
13	ENSMUSG00000031622	Sin3b	1.2255	9.57E-06
14	ENSMUSG00000024277	Mapre2	1.6168	7.26E-07
15	ENSMUSG00000031585	Gtf2e2	0.9649	3.40E-05
16	ENSMUSG00000006058	Snf8	1.0000	2.99E-05
17	ENSMUSG00000020029	Nudt4	1.3121	8.31E-06
18	ENSMUSG00000081833	Gm13669	1.4963	1.79E-04
19	ENSMUSG00000033192	Lpcat2	1.0099	4.97E-05
20	ENSMUSG00000055994	Nod2	0.9277	2.19E-05
21	ENSMUSG00000070305	Mpzl3	1.9194	5.80E-05
22	ENSMUSG00000024055	Cyp4f13	1.3238	3.88E-05
23	ENSMUSG00000033885	Pxk	1.3103	7.13E-05
24	ENSMUSG00000029338	Antxr2	1.8421	1.72E-06
25	ENSMUSG00000063406	Tmed5	1.5012	2.55E-05
26	ENSMUSG00000027429	Sec23b	1.2988	2.85E-06
27	ENSMUSG00000024474	Ik	1.1109	1.22E-05
28	ENSMUSG00000064215	Ifi27	1.1475	2.96E-04
29	ENSMUSG00000029322	Plac8	1.8635	3.77E-06
30	ENSMUSG00000021982	Cdadc1	1.4395	1.17E-04
31	ENSMUSG00000066441	Rdh11	1.1504	2.66E-04
32	ENSMUSG00000030056	Isy1	1.4330	8.50E-05

33	ENSMUSG00000067613	Krt83	2.3045	2.25E-04
34	ENSMUSG00000052139	Babam2	1.3784	3.40E-05
35	ENSMUSG00000049653	Spatc1	1.6957	2.42E-05
36	ENSMUSG00000092920	Mirt2	1.5579	5.51E-05
37	ENSMUSG00000054905	Stfa3	3.9392	4.85E-05
38	ENSMUSG00000024082	Ndufaf7	1.5626	3.79E-05
39	ENSMUSG00000059316	Slc27a4	1.5390	1.03E-04
40	ENSMUSG00000026696	Vamp4	1.1772	2.24E-05
41	ENSMUSG00000094733	Gm5416	1.9981	8.32E-05
42	ENSMUSG00000024953	Prdx5	1.8274	1.06E-05
43	ENSMUSG00000019795	Pcmt1	1.1607	2.29E-05
44	ENSMUSG00000021576	Pdcd6	1.2525	1.66E-04
45	ENSMUSG00000037958	Nsrp1	1.0530	3.74E-05
46	ENSMUSG00000055447	Cd47	1.4749	1.22E-06
47	ENSMUSG00000063889	Crem	2.2627	1.43E-07
48	ENSMUSG00000038467	Chmp4b	1.2202	8.39E-05
49	ENSMUSG00000026271	Gpr35	1.5706	2.71E-06
50	ENSMUSG00000009633	G0s2	1.3618	7.38E-05
51	ENSMUSG00000074417	Gm14548	1.6020	5.64E-05
52	ENSMUSG00000074417	Gm14548	1.6020	5.64E-05
53	ENSMUSG00000074417	Gm14548	1.6020	5.64E-05
54	ENSMUSG00000031825	Crispld2	2.2653	7.71E-05
55	ENSMUSG00000026068	Il18rap	1.5528	1.56E-04
56	ENSMUSG00000078122	F630028O10Rik	1.4824	5.93E-06
57	ENSMUSG00000059089	Fcgr4	1.2136	2.67E-05
58	ENSMUSG00000022831	Hcls1	1.1464	7.83E-05
59	ENSMUSG00000085245	Gm11713	2.8661	1.07E-04
60	ENSMUSG00000040451	Sgms1	1.3563	1.73E-05
61	ENSMUSG00000030472	Ceacam18	1.9769	1.77E-05
62	ENSMUSG00000049988	Lrrc25	1.0231	1.25E-04
63	ENSMUSG00000030474	Siglece	1.4460	3.35E-05
64	ENSMUSG00000028159	Dapp1	0.8773	2.25E-04
65	ENSMUSG00000018932	Map2k3	0.8638	1.32E-04
66	ENSMUSG00000055866	Per2	1.6433	1.31E-04
67	ENSMUSG00000021555	Naa35	0.8559	1.18E-04
68	ENSMUSG00000035596	Mboat7	1.2505	9.57E-06
69	ENSMUSG00000079597	Gm5483	2.6932	1.31E-05
70	ENSMUSG00000095620	2010005H15Rik	2.6624	2.67E-05
71	ENSMUSG00000021365	Nedd9	1.8210	5.19E-07
72	ENSMUSG00000006850	Tmco6	1.8659	7.22E-06
73	ENSMUSG00000020248	Nfyb	1.2840	1.42E-05
74	ENSMUSG00000048120	Entpd1	1.3312	9.72E-06
75	ENSMUSG00000030747	Dgat2	2.0535	2.01E-05

76	ENSMUSG00000027360	Hdc	1.8667	2.18E-05
77	ENSMUSG00000092060	Bend4	2.2837	1.25E-04
78	ENSMUSG00000020687	Cdc27	1.4752	1.75E-04
79	ENSMUSG00000055805	Fmnl1	0.9203	3.01E-04
80	ENSMUSG00000019986	Ahi1	1.3600	8.88E-05
81	ENSMUSG00000022280	Rnf19a	1.4570	3.77E-06
82	ENSMUSG00000019920	Lims1	1.4234	6.86E-06
83	ENSMUSG00000021796	Bmpr1a	1.6357	3.28E-05
84	ENSMUSG00000079499	6530402F18Rik	1.4332	2.19E-05
85	ENSMUSG00000031134	Rbmx	0.9303	4.69E-05
86	ENSMUSG00000063268	Parp10	1.7731	1.58E-04
87	ENSMUSG00000039236	Isg20	1.4247	2.57E-04
88	ENSMUSG00000078853	Igtp	2.4791	1.61E-04
89	ENSMUSG00000078920	Ifi47	3.7197	9.28E-06
90	ENSMUSG00000046879	Irgm1	2.7582	3.38E-05
91	ENSMUSG00000082292	Gm12250	4.1326	1.85E-05
92	ENSMUSG00000037321	Tap1	1.9527	1.40E-04
93	ENSMUSG00000074151	Nlrc5	1.6822	8.50E-05
94	ENSMUSG00000090709	Gm17173	2.8646	2.72E-05
95	ENSMUSG00000062991	Nrg1	2.8024	3.26E-05
96	ENSMUSG00000037012	Hk1	1.3088	4.85E-05
97	ENSMUSG00000079197	Psme2	1.4261	2.30E-04
98	ENSMUSG00000024737	Slc15a3	1.4982	5.86E-06
99	ENSMUSG00000101279	Gm18342	2.4477	8.56E-05
100	ENSMUSG00000089844	A530032D15Rik	2.6968	6.37E-07
101	ENSMUSG00000070031	Sp140	2.2990	4.23E-07
102	ENSMUSG00000021196	Pfkp	2.3801	1.00E-08
103	ENSMUSG00000021585	Cast	1.8127	3.81E-07
104	ENSMUSG00000007038	Neu1	1.7295	4.85E-07
105	ENSMUSG00000026519	Tmem63a	2.0361	4.43E-08
106	ENSMUSG00000052477	C130026I21Rik	2.7029	3.38E-05
107	ENSMUSG00000072109	A530040E14Rik	2.7784	3.37E-07
108	ENSMUSG00000070034	Sp110	1.8607	1.16E-06
109	ENSMUSG00000027366	Sppl2a	0.7927	1.91E-04
110	ENSMUSG00000025384	Faap100	0.9361	8.09E-05
111	ENSMUSG00000090136	Gm10177	1.3213	1.93E-04
112	ENSMUSG00000073987	Ggh	1.0918	1.14E-04
113	ENSMUSG00000009647	Mcu	1.0584	4.18E-05
114	ENSMUSG00000022978	Mis18a	1.0501	1.56E-04
115	ENSMUSG00000050931	Sgms2	1.2555	4.76E-05
116	ENSMUSG00000098967	Gm27845	1.3739	2.06E-04
117	ENSMUSG00000098088	Gm26916	1.2759	2.68E-04
118	ENSMUSG00000085335	Gm13684	2.6924	4.23E-05

119	ENSMUSG00000026655	Fam107b	1.2538	7.22E-06
120	ENSMUSG00000038463	Olfml2b	2.9473	1.80E-07
121	ENSMUSG00000069170	Adgrv1	3.8219	1.80E-05
122	ENSMUSG00000046808	Atp10d	2.5103	4.69E-07
123	ENSMUSG00000035513	Ntng2	1.6084	7.15E-05
124	ENSMUSG00000073771	Btbd19	1.1988	2.78E-04
125	ENSMUSG00000040663	Clcf1	2.5126	1.61E-04
126	ENSMUSG00000041235	Chd7	1.3795	4.97E-05
127	ENSMUSG00000078485	Plekhn1	3.6458	4.51E-06
128	ENSMUSG00000078485	Plekhn1	3.6458	4.51E-06
129	ENSMUSG00000027091	Zc3h15	0.8187	1.94E-04
130	ENSMUSG00000003228	Grk5	2.4921	4.23E-07
131	ENSMUSG00000023827	Agpat4	2.2848	2.79E-05
132	ENSMUSG00000038608	Dock10	2.4352	3.50E-05
133	ENSMUSG00000085126	Gm12589	2.7792	1.24E-05
134	ENSMUSG00000097636	Mirt1	0.9569	3.07E-04
135	ENSMUSG00000040152	Thbs1	1.9016	3.01E-04
136	ENSMUSG00000006169	Clint1	1.1413	8.09E-05
137	ENSMUSG00000023809	Rps6ka2	2.1616	2.34E-05
138	ENSMUSG00000079442	St6galnac4	1.1564	2.36E-04
139	ENSMUSG00000026470	Stx6	1.6775	3.21E-06
140	ENSMUSG00000040669	Phc1	1.9979	3.26E-05
141	ENSMUSG00000028716	Pdzk1ip1	3.4307	1.85E-04
142	ENSMUSG00000052512	Nav2	1.8364	5.64E-05
143	ENSMUSG00000029715	Pop7	1.1696	1.61E-04
144	ENSMUSG00000000827	Tpd52l2	1.0440	4.86E-05
145	ENSMUSG00000039208	Metrnl	1.4020	1.17E-05
146	ENSMUSG00000034220	Gpc1	1.8550	4.85E-07
147	ENSMUSG00000039844	Rapgef1	1.0648	1.25E-04
148	ENSMUSG00000051413	Plagl2	1.7014	5.39E-06
149	ENSMUSG00000063870	Chd4	0.8733	7.68E-05
150	ENSMUSG00000090394	4930523C07Rik	1.2743	9.57E-06
151	ENSMUSG00000048307	Ankrd46	1.3201	5.75E-06
152	ENSMUSG00000023067	Cdkn1a	1.3094	1.38E-06
153	ENSMUSG00000078812	Eif5a	1.3888	2.68E-05
154	ENSMUSG00000002845	Tmem39a	1.2050	2.83E-04
155	ENSMUSG00000031246	Sh3bgrl	0.9303	2.13E-04
156	ENSMUSG00000019437	Tlcd1	1.9086	2.71E-04
157	ENSMUSG00000035227	Spcs2	0.9468	8.14E-05
158	ENSMUSG00000030082	Sec61a1	0.9115	9.51E-05
159	ENSMUSG00000017405	Nek8	2.2174	1.96E-05
160	ENSMUSG00000041084	Ostc	1.2130	2.55E-05
161	ENSMUSG00000039217	Il18	1.7053	1.61E-04

162	ENSMUSG00000022686	B3gnt5	1.7613	2.75E-05
163	ENSMUSG00000030659	Nucb2	1.8636	9.57E-06
164	ENSMUSG00000029319	Coq2	2.2298	8.31E-06
165	ENSMUSG00000003134	Tbc1d8	1.5096	4.74E-05
166	ENSMUSG00000034135	Sik3	1.7563	2.67E-05
167	ENSMUSG00000025314	Ptprj	1.7139	1.57E-05
168	ENSMUSG00000045349	Sh2d5	4.6405	9.66E-07
169	ENSMUSG00000028792	Ak2	1.1683	1.56E-04
170	ENSMUSG00000022974	Paxbp1	1.3446	1.54E-04
171	ENSMUSG00000024220	Zfp523	1.9128	8.35E-05
172	ENSMUSG00000017386	Traf4	2.1506	9.41E-05
173	ENSMUSG00000046573	Lyrm4	2.1405	1.25E-05
174	ENSMUSG00000042831	Alkbh6	1.6332	3.65E-06
175	ENSMUSG00000022951	Rcan1	1.6841	1.04E-04
176	ENSMUSG00000042111	Ccdc115	1.3728	8.35E-05
177	ENSMUSG00000046731	Kctd11	1.3486	9.63E-05
178	ENSMUSG00000042992	Borcs5	1.2366	2.12E-04
179	ENSMUSG00000062421	Arf2	1.3545	8.25E-05
180	ENSMUSG00000034187	Nsf	1.3825	2.68E-05
181	ENSMUSG00000031304	Il2rg	1.7614	4.12E-06
182	ENSMUSG00000031278	Acsl4	2.0376	8.45E-07
183	ENSMUSG00000021367	Edn1	3.3442	1.13E-06
184	ENSMUSG00000026670	Uap1	1.7376	1.15E-05
185	ENSMUSG00000040274	Cdk6	1.8915	6.93E-05
186	ENSMUSG00000007458	M6pr	1.5479	8.35E-05
187	ENSMUSG00000031007	Atp6ap2	1.2524	1.56E-04
188	ENSMUSG00000020085	Aifm2	1.6113	3.79E-05
189	ENSMUSG00000003549	Ercc1	1.3024	2.02E-04
190	ENSMUSG00000020275	Rel	1.0570	2.07E-04
191	ENSMUSG00000024981	Acsl5	1.1821	3.21E-05
192	ENSMUSG00000030108	Slc6a13	1.6375	3.00E-04
193	ENSMUSG00000030060	Hmces	1.3722	1.70E-04
194	ENSMUSG00000060216	Arrb2	1.4469	1.74E-05
195	ENSMUSG00000019173	Rab5c	1.1618	8.96E-05
196	ENSMUSG00000097781	9330136K24Rik	1.8468	2.05E-04
197	ENSMUSG00000025757	Hspa4l	2.2008	5.89E-07
198	ENSMUSG00000051978	Erich1	1.1414	1.91E-04
199	ENSMUSG00000033721	Vav3	0.9020	1.93E-04
200	ENSMUSG00000024854	Pold4	1.3800	3.75E-06
201	ENSMUSG00000038855	Itpkb	1.4302	4.12E-06
202	ENSMUSG00000041231	Ublcp1	1.0853	2.85E-04
203	ENSMUSG00000027751	Supt20	0.8793	1.13E-04
204	ENSMUSG00000020225	Tmbim4	0.7851	1.58E-04

205	ENSMUSG00000073643	Wdfy1	1.1683	3.17E-04
206	ENSMUSG00000029136	Rbks	1.2343	1.24E-04
207	ENSMUSG00000031176	Dynlt3	1.1321	5.21E-05
208	ENSMUSG00000001833	44811	1.3318	1.72E-06
209	ENSMUSG00000073725	Lmbrd1	1.0455	4.67E-05
210	ENSMUSG00000074781	Ube2n	0.8450	1.61E-04
211	ENSMUSG00000040747	Cd53	1.1669	5.85E-05
212	ENSMUSG00000026914	Psmd14	1.1911	6.89E-05
213	ENSMUSG00000041355	Ssr2	1.1048	6.80E-05
214	ENSMUSG00000016194	Hsd11b1	1.5003	4.10E-05
215	ENSMUSG00000059119	Nap1l4	1.2910	1.65E-05
216	ENSMUSG00000055639	Dach1	2.4894	4.69E-05
217	ENSMUSG00000078974	Sec61g	1.2934	5.39E-06
218	ENSMUSG00000089683	4930570N18Rik	2.9915	4.97E-05
219	ENSMUSG00000027828	Ssr3	1.0674	2.01E-05
220	ENSMUSG00000029649	Pomp	1.7350	6.75E-07
221	ENSMUSG00000006050	Sra1	1.4147	8.48E-06
222	ENSMUSG00000020077	Srgn	1.3448	1.80E-05
223	ENSMUSG00000027940	Tpm3	1.0540	8.93E-05
224	ENSMUSG00000052270	Fpr2	2.3389	3.08E-06
225	ENSMUSG00000038172	Ttc39b	1.4174	3.35E-05
226	ENSMUSG00000026095	Asnsd1	1.7628	1.70E-04
227	ENSMUSG00000045551	Fpr1	2.0405	8.50E-05
228	ENSMUSG00000019868	Vta1	0.8657	2.87E-04
229	ENSMUSG00000051439	Cd14	1.6505	4.73E-06
230	ENSMUSG00000038527	C1rl	2.1484	7.26E-07
231	ENSMUSG00000030922	Lyrm1	1.1393	1.17E-04
232	ENSMUSG00000053846	Lipg	1.8291	2.54E-05
233	ENSMUSG00000022026	Olfm4	2.1315	4.67E-05
234	ENSMUSG00000060470	Adgrg3	1.6026	2.38E-05
235	ENSMUSG00000027333	Smox	1.6584	2.38E-05
236	ENSMUSG00000021557	Agtpbp1	1.6200	1.49E-05
237	ENSMUSG00000064147	Rab44	1.1557	2.25E-05
238	ENSMUSG00000027776	Il12a	3.2751	1.00E-08
239	ENSMUSG00000054855	Rnd1	2.0343	6.69E-07
240	ENSMUSG00000097113	Gm19705	1.8330	2.96E-05
241	ENSMUSG00000023892	Zfp51	1.0148	1.22E-04
242	ENSMUSG00000050029	Rap2c	0.9288	8.45E-05
243	ENSMUSG00000032602	Slc25a20	1.5760	2.54E-04
244	ENSMUSG00000066363	Serpina3f	2.8380	1.66E-04
245	ENSMUSG00000037965	Zc3h7a	1.2609	9.72E-06
246	ENSMUSG00000075122	Cd80	1.2943	2.43E-06
247	ENSMUSG00000018899	Irf1	1.9823	8.48E-06

248	ENSMUSG00000034855	Cxcl10	3.8707	2.88E-06
249	ENSMUSG00000046223	Plaur	1.1505	1.78E-05
250	ENSMUSG00000007589	Tinf2	2.4399	5.57E-06
251	ENSMUSG00000057440	Mpp7	1.9773	1.42E-06
252	ENSMUSG00000029104	Htt	2.0767	2.19E-05
253	ENSMUSG00000074071	Fam169b	4.3966	4.66E-08
254	ENSMUSG00000048787	Dcun1d3	1.4250	8.48E-06
255	ENSMUSG00000024222	Fkbp5	1.7449	5.86E-05
256	ENSMUSG00000040943	Tet2	1.4763	2.38E-05
257	ENSMUSG00000030203	Dusp16	1.5205	1.80E-06
258	ENSMUSG00000015243	Abca1	2.4312	8.01E-08
259	ENSMUSG00000028163	Nfkb1	1.5622	5.19E-07
260	ENSMUSG00000029084	Cd38	3.6195	1.00E-08
261	ENSMUSG00000015850	Adamtsl4	2.1024	5.56E-07
262	ENSMUSG00000028108	Ecm1	2.8335	1.92E-08
263	ENSMUSG00000098708	Gm27252	3.5984	5.54E-07
264	ENSMUSG00000026096	Osgepl1	2.2155	3.19E-07
265	ENSMUSG00000025130	P4hb	2.1940	1.01E-08
266	ENSMUSG00000006736	Tspan31	0.9060	2.02E-04
267	ENSMUSG00000022221	Ripk3	1.3748	9.72E-06
268	ENSMUSG00000040809	Chil3	2.9305	3.35E-05
269	ENSMUSG00000063779	Chil4	2.7987	9.37E-06
270	ENSMUSG00000057280	Musk	3.8976	1.37E-04
271	ENSMUSG00000002658	Gtf2f1	1.2727	7.15E-06
272	ENSMUSG00000023087	Noct	1.6912	2.18E-06
273	ENSMUSG00000002233	Rhoc	1.7596	1.01E-06
274	ENSMUSG00000067931	Zfp948	2.8143	3.86E-06
275	ENSMUSG00000027777	Schip1	2.7223	6.99E-07
276	ENSMUSG00000026074	Map4k4	1.3942	1.00E-04
277	ENSMUSG00000079652	Fam71f2	2.5314	1.65E-05
278	ENSMUSG00000029304	Spp1	3.7934	2.54E-05
279	ENSMUSG00000018882	Mrpl45	1.2024	1.59E-04
280	ENSMUSG00000064145	Arih2	1.0463	1.55E-04
281	ENSMUSG00000048327	Ckap2l	1.3793	2.85E-04
282	ENSMUSG00000040374	Pex2	1.0277	1.61E-04
283	ENSMUSG00000001473	Tubb6	2.2595	9.28E-06
284	ENSMUSG00000024539	Ptpn2	0.8766	2.07E-04
285	ENSMUSG00000029552	Tes	2.2789	5.56E-07
286	ENSMUSG00000031245	Hmgn5	1.5858	1.31E-04
287	ENSMUSG00000020644	Id2	1.5054	1.33E-04
288	ENSMUSG00000002699	Lcp2	1.0280	5.86E-06
289	ENSMUSG00000031901	Dus2	2.0591	7.48E-06
290	ENSMUSG00000029204	Rhoh	2.7543	1.00E-08

291	ENSMUSG00000031762	Mt2	2.2518	6.54E-06
292	ENSMUSG00000020484	Xbp1	1.2538	2.50E-05
293	ENSMUSG00000030595	Nfkbib	1.2056	5.94E-05
294	ENSMUSG00000038067	Csf3	2.3685	2.39E-06
295	ENSMUSG00000006818	Sod2	1.2896	1.78E-04
296	ENSMUSG00000021668	Polk	1.6298	8.50E-05
297	ENSMUSG00000026984	Il1f6	3.5503	1.15E-04
298	ENSMUSG00000094845	Tmem95	2.2391	8.00E-05
299	ENSMUSG00000020205	Phlda1	1.2193	1.22E-04
300	ENSMUSG00000026097	Ormdl1	1.4987	1.19E-05
301	ENSMUSG00000002847	Pla1a	2.1596	4.23E-05
302	ENSMUSG00000001999	Blvra	1.5655	6.96E-05
303	ENSMUSG00000029484	Anxa3	1.2123	1.56E-04
304	ENSMUSG00000026029	Casp8	1.6041	5.26E-06
305	ENSMUSG00000029379	Cxcl3	3.1600	4.43E-08
306	ENSMUSG00000028128	F3	1.5989	1.51E-05
307	ENSMUSG00000013846	St3gal1	1.4984	3.50E-05
308	ENSMUSG00000026558	Uck2	2.1082	4.97E-05
309	ENSMUSG00000058022	Adtrp	1.8497	2.36E-04
310	ENSMUSG00000022534	Mefv	1.2502	5.94E-05
311	ENSMUSG00000031506	Ptpn7	1.4176	9.17E-05
312	ENSMUSG00000000628	Hk2	1.0309	2.70E-04
313	ENSMUSG00000087066	Gm15518	3.0447	2.00E-04
314	ENSMUSG00000079037	Prnp	2.5228	3.65E-06
315	ENSMUSG00000021871	Gm49342	0.9152	1.53E-04
316	ENSMUSG00000043008	Klhl6	2.2070	2.55E-05
317	ENSMUSG00000024235	Map3k8	0.8677	2.11E-04
318	ENSMUSG00000043421	Hilpda	1.7581	4.67E-05
319	ENSMUSG00000045664	Cdc42ep2	1.0624	3.15E-05
320	ENSMUSG00000071180	Smim15	0.8665	1.93E-04
321	ENSMUSG00000030469	Zfp719	1.0797	2.23E-05
322	ENSMUSG00000072620	Slfn2	0.9963	1.70E-05
323	ENSMUSG00000003206	Ebi3	1.1838	6.93E-05
324	ENSMUSG00000020451	Limk2	0.9760	2.01E-04
325	ENSMUSG00000040822	1700123O20Rik	1.0248	7.21E-05
326	ENSMUSG00000096140	Ankrd66	2.3706	6.75E-06
327	ENSMUSG00000069873	4930438A08Rik	2.8284	8.65E-06
328	ENSMUSG00000080316	Spaca6	1.6544	2.85E-04
329	ENSMUSG00000033066	Gas7	1.1991	1.22E-04
330	ENSMUSG00000039934	Gsap	0.9597	2.03E-04
331	ENSMUSG00000022102	Dok2	1.9305	4.22E-05
332	ENSMUSG00000018500	Adora2b	2.0856	8.93E-05
333	ENSMUSG00000026031	Cflar	1.1802	1.52E-04

334	ENSMUSG00000021895	Arhgef3	0.9044	2.25E-04
335	ENSMUSG00000027381	Bcl2l11	1.1343	4.97E-05
336	ENSMUSG00000037759	Ptger2	1.1457	3.11E-04
337	ENSMUSG00000003847	Nfat5	1.0715	1.45E-04
338	ENSMUSG00000020227	Irak3	2.5264	1.01E-08
339	ENSMUSG00000033499	Larp4b	1.4814	1.19E-05
340	ENSMUSG00000031781	Ciapin1	1.5719	1.16E-06
341	ENSMUSG00000092526	Gm17907	2.4975	2.50E-05
342	ENSMUSG00000051341	Zfp52	2.1590	5.08E-06
343	ENSMUSG00000044719	E230025N22Rik	3.8868	5.99E-06
344	ENSMUSG00000030447	Cyfip1	2.1082	3.13E-07
345	ENSMUSG00000079477	Rab7	1.0887	4.97E-05
346	ENSMUSG00000019210	Atp6v1e1	1.0638	4.68E-05
347	ENSMUSG00000053012	Krcc1	0.9755	2.13E-05
348	ENSMUSG00000094870	Zfp131	1.0834	1.55E-04
349	ENSMUSG00000021699	Pde4d	1.5536	4.73E-06
350	ENSMUSG00000024778	Fas	1.0873	2.38E-05
351	ENSMUSG00000026177	Slc11a1	1.2763	1.16E-06
352	ENSMUSG00000005615	Pcyt1a	-0.9281	1.33E-04
353	ENSMUSG00000027698	Nceh1	-1.9551	1.03E-04
354	ENSMUSG00000087141	Plcxd2	-2.6109	2.14E-05
355	ENSMUSG00000073700	Klhl21	-2.3086	7.71E-05
356	ENSMUSG00000030161	Gabarapl1	-1.2949	1.32E-04
357	ENSMUSG00000028378	Ptgr1	-2.4777	4.67E-05
358	ENSMUSG00000094530	Gm21399	-2.7834	1.11E-06
359	ENSMUSG00000028691	Prdx1	-2.8073	1.00E-08
360	ENSMUSG00000048164	Gm7204	-2.8353	2.19E-05
361	ENSMUSG00000005413	Hmox1	-1.5139	8.14E-05
362	ENSMUSG00000028124	Gclm	-2.3165	2.54E-05
363	ENSMUSG00000003849	Nqo1	-2.8906	3.21E-06
364	ENSMUSG00000074063	Osgin1	-1.4111	4.69E-05
365	ENSMUSG00000025591	Tma16	-2.4073	1.08E-04
366	ENSMUSG00000004099	Dnmt1	-1.9736	2.04E-04
367	ENSMUSG00000038508	Gdf15	-3.6870	8.35E-05
368	ENSMUSG00000042870	Tom1	-0.9438	2.85E-04
369	ENSMUSG00000049103	Ccr2	-1.8920	2.70E-04
370	ENSMUSG00000005667	Mthfd2	-1.1792	2.55E-04
371	ENSMUSG00000068220	Lgals1	-1.4796	7.45E-05
372	ENSMUSG00000040552	C3ar1	-1.7091	3.25E-04
373	ENSMUSG00000019838	Slc16a10	-1.2940	2.26E-04
374	ENSMUSG00000051906	Cd209f	-3.8818	1.68E-04
375	ENSMUSG00000025950	Idh1	-1.2209	3.14E-04
376	ENSMUSG00000021775	Nr1d2	-1.9724	2.95E-04

377	ENSMUSG00000086491	Gm13291	-6.7006	1.37E-04
378	ENSMUSG00000033105	Lss	-2.2697	2.85E-04
379	ENSMUSG00000006800	Sulf2	-1.7658	7.38E-05
380	ENSMUSG00000022769	Sdf2l1	-2.1207	8.00E-05
381	ENSMUSG00000021190	Lgmn	-1.5640	2.01E-04
382	ENSMUSG00000024397	Aif1	-1.6017	2.88E-04
383	ENSMUSG00000029416	Slc15a4	-1.6552	3.16E-04
384	ENSMUSG00000057137	Tmem140	-1.6655	2.66E-04
385	ENSMUSG00000040713	Creg1	-2.5146	1.90E-07
386	ENSMUSG00000040466	Blvrb	-2.7573	7.05E-08
387	ENSMUSG00000023132	Gzma	-2.4369	2.85E-04
388	ENSMUSG00000048249	Crebrf	-0.9926	4.97E-05
389	ENSMUSG00000049091	Sephs2	-1.2698	3.34E-05
390	ENSMUSG00000047412	Zbtb44	-1.3330	2.50E-05
391	ENSMUSG00000021250	Fos	-1.0379	2.25E-04
392	ENSMUSG00000026986	Hnmt	-0.8434	4.18E-05
393	ENSMUSG00000054008	Ndst1	-0.8921	9.51E-05
394	ENSMUSG00000026393	Nek7	-1.0325	2.36E-04
395	ENSMUSG00000032841	Prr5l	-1.7286	2.89E-05
396	ENSMUSG00000029863	Casp2	-1.1909	1.75E-04
397	ENSMUSG00000031453	Rasa3	-1.4927	9.39E-06
398	ENSMUSG00000037185	Krt80	-1.4975	1.11E-06
399	ENSMUSG00000028861	Mrps15	-1.1872	2.19E-05
400	ENSMUSG00000090665	Gad1-ps	-1.4841	2.33E-06
401	ENSMUSG00000050022	Amz1	-2.0357	1.11E-05
402	ENSMUSG00000028550	Atg4c	-1.9227	2.29E-05
403	ENSMUSG00000027009	Itga4	-1.6312	1.13E-05
404	ENSMUSG00000032254	Kif23	-1.1854	1.87E-04
405	ENSMUSG00000076617	Ighm	-1.6763	4.12E-06
406	ENSMUSG00000023915	Tnfrsf21	-0.8445	2.20E-04
407	ENSMUSG00000004105	Angptl2	-1.2248	1.92E-04
408	ENSMUSG00000033910	Gucy1a1	-1.1284	2.65E-04
409	ENSMUSG00000068196	Col8a1	-1.8323	3.01E-04
410	ENSMUSG00000027015	Cybrd1	-2.2941	1.18E-04
411	ENSMUSG00000027574	Nkain4	-2.0756	4.18E-05
412	ENSMUSG00000024781	Lipa	-1.6981	8.65E-06
413	ENSMUSG00000021189	Atxn3	-0.9921	2.02E-04
414	ENSMUSG00000025232	Hexa	-1.1423	1.92E-04
415	ENSMUSG00000015340	Cybb	-2.6505	1.00E-08
416	ENSMUSG00000024782	Ak3	-1.0907	1.89E-04
417	ENSMUSG00000053716	Dusp7	-1.3529	3.11E-04
418	ENSMUSG00000019849	Prep	-2.6126	1.69E-06
419	ENSMUSG00000030357	Fkbp4	-1.7413	6.96E-05

420	ENSMUSG00000033059	Pygb	-1.7370	2.63E-04
421	ENSMUSG00000017760	Ctsa	-1.2253	1.37E-04
422	ENSMUSG00000048440	Cyp4f16	-2.2622	6.75E-07
423	ENSMUSG00000024013	Fgd2	-1.5073	5.50E-05
424	ENSMUSG00000000903	Vpreb3	-5.7178	5.99E-06
425	ENSMUSG00000028944	Prkag2	-1.7293	1.43E-04
426	ENSMUSG00000035064	Eef2k	-2.6956	2.58E-06
427	ENSMUSG00000048824	Gm568	-1.7044	6.72E-05
428	ENSMUSG00000020898	Ctc1	-1.8078	4.02E-05
429	ENSMUSG00000029270	Fam69a	-1.4415	2.38E-05
430	ENSMUSG00000058799	Nap1l1	-1.0943	9.24E-06
431	ENSMUSG00000043664	Tmem221	-5.2109	3.07E-04
432	ENSMUSG00000005540	Fcer2a	-6.0130	6.93E-05
433	ENSMUSG00000053044	Cd8b1	-4.6769	2.68E-04
434	ENSMUSG00000086763	Plxna4os1	-3.6646	1.30E-04
435	ENSMUSG00000020653	Klf11	-1.4061	8.23E-05
436	ENSMUSG00000054517	Trim65	-1.7359	2.61E-04
437	ENSMUSG00000030223	Ptpro	-3.1822	3.45E-05
438	ENSMUSG00000024673	Ms4a1	-3.4041	1.08E-04
439	ENSMUSG00000014846	Tppp3	-2.3603	4.22E-07
440	ENSMUSG00000000740	Rpl13	-0.8107	2.53E-04
441	ENSMUSG00000037548	H2-DMb2	-1.6140	1.30E-04
442	ENSMUSG00000003379	Cd79a	-2.4439	6.86E-06
443	ENSMUSG00000040592	Cd79b	-2.7475	4.10E-05
444	ENSMUSG00000034634	Ly6d	-3.9070	1.65E-05
445	ENSMUSG00000076937	Iglc2	-4.4570	5.39E-06
446	ENSMUSG00000030724	Cd19	-3.0227	1.00E-05
447	ENSMUSG00000076609	Igkc	-3.4391	1.12E-06
448	ENSMUSG00000076934	Iglv1	-4.8920	1.58E-04
449	ENSMUSG00000094797	Igkv6-15	-4.8615	4.88E-05
450	ENSMUSG00000048498	Cd300e	-3.5672	8.09E-05
451	ENSMUSG00000032915	Adgre4	-3.1951	7.20E-05
452	ENSMUSG00000060600	Eno3	-2.8514	1.95E-04
453	ENSMUSG00000048058	Ldlrad3	-2.2551	2.62E-04
454	ENSMUSG00000033033	Calhm2	-3.2794	4.38E-05
455	ENSMUSG00000033316	Galnt9	-4.8469	1.98E-04
456	ENSMUSG00000043832	Clec4a3	-1.9993	4.23E-05
457	ENSMUSG00000021880	Rnase6	-3.1097	1.58E-05
458	ENSMUSG00000006611	Hfe	-2.2874	1.75E-05
459	ENSMUSG00000040616	Tmem51	-2.8551	1.87E-04
460	ENSMUSG00000044229	Nxpe4	-3.5886	1.70E-04
461	ENSMUSG00000052160	Pld4	-3.2424	3.81E-06
462	ENSMUSG00000049625	Tifab	-2.4829	1.14E-04

463	ENSMUSG00000040964	Arhgef10l	-2.8170	2.95E-04
464	ENSMUSG00000030091	Nup210	-2.6074	1.66E-04
465	ENSMUSG00000005583	Mef2c	-1.7006	7.68E-05
466	ENSMUSG00000061132	Blnk	-2.7789	2.85E-04
467	ENSMUSG00000037944	Ccr7	-2.4069	4.67E-05
468	ENSMUSG00000022336	Eif3e	-1.0129	9.73E-05
469	ENSMUSG00000048371	Pdp2	-1.2387	3.14E-04
470	ENSMUSG00000022817	Itgb5	-1.2995	2.00E-04
471	ENSMUSG00000001270	Ckb	-1.6943	1.56E-05
472	ENSMUSG00000058558	Rpl5	-0.7793	1.83E-04
473	ENSMUSG00000008668	Rps18	-0.8795	1.93E-04
474	ENSMUSG00000057841	Rpl32	-0.8495	1.59E-04
475	ENSMUSG00000022982	Sod1	-0.9732	1.56E-04
476	ENSMUSG00000038127	Ccdc50	-2.0746	3.35E-05
477	ENSMUSG00000036606	Plxnb2	-2.5239	3.08E-06
478	ENSMUSG00000021262	Evl	-3.4342	8.10E-05
479	ENSMUSG00000026170	Cyp27a1	-3.7573	2.88E-04
480	ENSMUSG00000027994	Mcub	-2.5517	5.86E-05
481	ENSMUSG00000004707	Ly9	-2.6331	2.33E-04
482	ENSMUSG00000000278	Scpep1	-1.6366	5.45E-05
483	ENSMUSG00000070873	Lilra5	-2.1285	6.89E-05
484	ENSMUSG00000024677	Ms4a6b	-1.9612	1.56E-04
485	ENSMUSG00000079419	Ms4a6c	-1.9223	1.09E-04
486	ENSMUSG00000027187	Cat	-2.0793	4.23E-07
487	ENSMUSG00000006360	Crip1	-1.9810	1.69E-06
488	ENSMUSG00000026317	Cln8	-2.6608	5.39E-06
489	ENSMUSG00000021423	Ly86	-3.0909	9.72E-06
490	ENSMUSG00000015355	Cd48	-1.9564	6.62E-05
491	ENSMUSG00000026496	Parp1	-2.8185	1.00E-04
492	ENSMUSG00000039497	Dse	-2.1337	3.26E-05
493	ENSMUSG00000072596	Ear2	-2.1674	2.05E-05
494	ENSMUSG00000006281	Tep1	-1.7102	2.80E-04
495	ENSMUSG00000028085	Gatb	-2.2965	1.41E-04
496	ENSMUSG00000027863	Cd2	-2.5162	8.83E-05
497	ENSMUSG00000001642	Akr1b3	-1.5627	2.08E-05
498	ENSMUSG00000003420	Fcgrt	-1.4152	6.09E-05
499	ENSMUSG00000026548	Slamf9	-2.4612	3.16E-04
500	ENSMUSG00000025203	Scd2	-1.7970	2.63E-04