

## Supplementary Information

### ONLINE METHODS

**Mice.** Mice were housed in the facilities of the Institute of Molecular Medicine in Lisbon (IMM), University of Massachusetts Medical School (Worcester) and University Hospital of Bonn. C57BL/6J, CD-1 and BALB/c wild-type mice were purchased from Charles River Breeding Laboratories. *Ifnar1*-deficient mice were bred in specific pathogen-free facilities at the Instituto Gulbenkian de Ciência. *Ifnar1* flox/flox<sup>38</sup> were used to generate LysM-Cre-*Ifnar1*flox/flox and Alb-Cre-*Ifnar1*flox/flox mice. *Mavs*<sup>-/-</sup> mice were from of Z.J. Chen (South Western Medical School, Dallas, TX). *Mda5*<sup>-/-</sup> mice were from M. Colonna (Washington University, St. Louis, MI). *Rig-I*<sup>-/-</sup>, *Tlr3*<sup>-/-</sup>, *Tlr4*<sup>-/-</sup>, *Trif*<sup>-/-</sup> and *Myd88*<sup>-/-</sup> mice were a gift of S. Akira, Osaka, Japan. *Trif*<sup>-/-</sup> and *Myd88*<sup>-/-</sup> mice were used for generating *Trif*<sup>-/-</sup>/*Myd88*<sup>-/-</sup> mice. *Rig-I*<sup>-/-</sup> mice were kept on an outbred background (CD1 ICR). *Irf9*<sup>-/-</sup>/*Irf7*<sup>-/-</sup> and *Irf3*<sup>-/-</sup> mice were kindly provided by Tadatsugu Taniguchi and *Ifit1-lacZ*<sup>12</sup> mice by Gulio-Superturfa. Mice used in this manuscript are in C57BL/6 background and have been backcrossed at least 10 times. All experiments were approved by the institutional ethics committee.

**Parasite strains , liver infection and blood parasitaemia.** GFP- or luciferase-expressing *P. berghei*-ANKA (*Pb*) wt<sup>39,40</sup> and *p36p*<sup>-15</sup>, *P. yoelii* 17XNL (*Py*) 17XNL and *P. berghei* NK65 wt, *uis3*<sup>-</sup> and *uis4*<sup>-13,14</sup> sporozoites were obtained by dissection of *Anopheles stephensi* infected mosquitoes bred at the IMM and NYU insectariums. For all experiments with *P. berghei* the ANKA strain was used except for the experiment presented in Supplementary Fig. 2 for which we used the NK65 strain. Mice were injected intravenously with the designated quantity of sporozoites. Mosquito bite infection was performed with 10 mosquitoes per mouse except when specified otherwise. Parasite liver load was quantified by qRT-PCR in total liver of infected mice after indicated time points of infection. The presence of erythrocytic stage parasites was monitored by Giemsa-stained blood smears and fluorescence activated cell sorting (FACS). For FACS measurements, using the FACS Calibur (BD Biosciences), a drop of blood in 1 x PBS was used to measure the blood parasitaemia. GFP expressing parasites were detected in the green fluorescent channel FL1-H. The gated amount related to all detected live cells corresponds to the blood parasitaemia in percent. FACS data were analyzed using FlowJo software (version 9.0.2, Tree Star Inc., Oregon, USA).

**RNA isolation of total livers and qRT-PCR quantification.** For mouse liver RNA extraction whole livers were homogenized in 3 ml denaturing solution (4 M guanidine thiocyanate; 25 mM sodium citrate pH 7, 0.5% NLauroylsarcosine and, 0.7%  $\beta$  Mercaptoethanol in DEPC-treated water). RNA was extracted using RNeasy Mini kit (Qiagen). Complementary DNA was synthesized using Transcriptor First Strand cDNA Synthesis kit (Roche). Gene expression analysis was performed using kits from Applied Biosystems. For analysis, the expression levels of all target genes were normalized against Hypoxanthine Guanine Phosphoribosyltransferase (*Hprt*) housekeeping gene (DCt). Gene expression values were then calculated based on the DDCT method, using the mean of

control group as calibrator to which all other samples were compared. Relative quantities (RQ) were determined using the equation  $RQ = 2^{-\Delta\Delta Ct}$ . Primer pairs used to detect target gene transcripts are listed in Supplementary Table 3.

**Transcription profiling.** The profiles of sporozoite infected livers was previously published by Portugal et al<sup>35</sup>. Additionally, we collected data using the same protocol, which we quote here: "Transcriptome data were generated using Affymetrix mouse Gene 1.0 ST Array and C57BL/B6J mouse livers 40 h after being injected with sporozoite-free salivary gland material or infected with  $5 \times 10^4$  *Pb* sporozoites. Total RNA was extracted using RNeasy Mini kit (Qiagen). Three biological replicates were analysed for each group. RNA quality and quantity was assessed on a Bioanalyser nanochip (Agilent). Total RNA was reverse transcribed and end-labelled as cRNA using the GeneChip WT Amplified Double-Stranded cDNA Synthesis Kit and the GeneChip WT Terminal Labeling Kit as recommended by Affymetrix. Hybridisation to an Affymetrix Mouse Gene 1.0 ST Array was carried out at 45°C for 16h under rotation (60 rpm). Arrays were washed on an Affymetrix FS450 and scanned using an Affymetrix Genechip Scanner 3000 7G." Arrays were normalized using the robust multiarray averaging (RMA) method<sup>41</sup> as implemented in the Bioconductor oligo package<sup>42</sup>, and differential expression was detected using linear models and empirical Bayesian methods as implemented in the Bioconductor limma package<sup>43</sup>. 1088 genes were differentially expressed ( $P < 0.05$ ), when the sporozoite infected group was compared to the Sg infected control. Of these, 86 were at least 2-fold up regulated. GO overrepresentation was measured using the GOstats tool<sup>44</sup>. Original data was submitted to Array Express and is accessible in the reviewer's user account: Username: Reviewer\_E-MTAB-1145, and Password: 6a2yxuYQ.

**RNA isolation from hepatocytes and non-parenchymal cells.** Mouse primary hepatocytes were isolated using a modified two-step perfusion protocol followed by a percoll purification step<sup>45,46</sup>. Briefly, mice were sacrificed by CO<sub>2</sub> inhalation and immediately processed for cannulation of the portal vein using a 26G needle. Upon successful cannulation the inferior vena cava (IVC) was cut to allow fluid to drain. Liver perfusion medium (LPM, Gibco) was perfused at 8-9 mL/ min for 10 min followed by liver digestion medium (LDM, Gibco) also at a rate of 8- 9 mL/min for 10 min. Intermittent clamping of the IVC (3 s clamp every 30s) was performed during LDM perfusion to improve tissue digestion. After digestion the liver was excised and the cells were liberated by tearing and shaking of the liver with forceps. The cell suspension was then sequentially filtered through a 100µm and a 70µm cell strainer and spun at 50g for 3 minutes. The cell pellet was resuspended in Williams' Medium E (Gibco) with 10% of Foetal Calf Serum (FBS, Gibco) and carefully overlaid on a 60% Percoll solution (1:1). The cell suspension was fractionated by centrifugation at 750 g during 20 min, without brake, at 20°C. Viable hepatocytes deposited in the pellet were washed with Williams' Medium E with 10% FBS, spun at 50g for 3 minutes and resuspended in complete Williams' Medium E (supplemented with 4% FBS and 1% Penicillin/Streptomycin, Gibco). Viability and yield were assessed by trypan blue. To obtain mouse primary non-parenchymal cells, perfused livers were squeezed in 1 x PBS solution containing DNase ( $2 \text{ U ml}^{-1}$ ), filtered through a 70 µm filter followed by 8 min centrifugation at 1,300 rpm. The pellet was resuspended in 10 ml of 35% percoll and centrifuged at 2,600 rpm for 20 min without break at 20 °C. The

pellet representing the non-parenchymal cells was washed in 1 x PBS containing 2% serum before resuspension into Lysis/binding Buffer. qRT-PCR analysis of the relative expression of macrophage (*Cd68*), neutrophil (*Ncf2*) and hepatocyte (*ApoA1*) markers was performed to confirm purity of the obtained populations.

**IRF3 bone marrow chimeric mice.** Chimeric mice were generated by transplanting wt (C57Bl/6) bone marrow (BM) into lethally  $\gamma$ -irradiated (900 rads) irradiated, *Irf3*-deficient mice (*Irf3*<sup>-/-</sup>/wt BM) or by transplanting *Irf3*-deficient BM into irradiated, wt mice (WT/*Irf3*<sup>-/-</sup> BM). Bone marrow cells from donor mice ( $1 \times 10^7$  cells) were injected into each recipient mouse through the retro-orbital venous plexus one day after irradiation. Chimeric animals were allowed to recover for eight weeks before sporozoite infection was initiated. Depletion of circulating cells and reconstitution with donor cells was confirmed in all chimeric mice by PCR of blood genomic DNA. Blood DNA was extracted using QIAamp DNA Micro Kit (Qiagen). PCR was performed using PCR Master Mix (Promega kit) and a set of three primers that amplify sequence either from the wild type (374 bp) or knockout (500 bp) allele. The following oligonucleotides (5'-3') were used for specific amplification: GAACCTCGGAGTTATCCCGAAGG, GTTTGAGTTATCCCTGCACTTGGG and TCGTGCTTTACGCTATCGCCGCTCCCGATT. Amplification program: 95° 15 min 1 cycle; 95° 30 sec, 60° 1 min, 72° 2 min 35 cycles; 4°C  $\infty$ .

**Western blot analysis.** Livers were lysed in RIPA Buffer (50 mM Tris-HCL pH 7.4, 150 mM NaCl, 0,25% Na-deoxycholate and a protease inhibitor cocktail). 20  $\mu$ g of total lysates were resolved on 10% SDS-PAGE and transferred to a nitrocellulose membrane (Hybond-ECL, GE Healthcare). IFIT1- and DAI-specific bands were detected by using the primary antibodies (murine anti-murine IFIT1 and rabbit anti-murine DAI, kindly provided by Gulio Superti-Furga). Mouse anti-murine  $\beta$ -tubulin (Santa Cruz #sc-58886) was used as a loading control. HRP-conjugated anti-mouse and anti-rabbit IgG F(ab')<sub>2</sub> fragment (GE Healthcare) were used as secondary antibodies. The membrane was developed using the ECL Western Blotting Analysis System, according to the manufacturer's instructions (GE Healthcare).

**Bone marrow-derived dendritic cell generation.** Bone marrow was isolated from femora and tibiae of 8 week old mice. Bone marrow was cultured in RPMI 1640 supplemented with L-glutamine, sodium pyruvate, non-essential amino acids, 50  $\mu$ g ml<sup>-1</sup> penicillin/streptomycin (Invitrogen) and GM-CSF (3%) to generate dendritic cells. After 7 days, cells were plated in 96-well plates at a density of  $2 \times 10^5$  cells per well and used for subsequent experiments.

**Plasmodial and viral RNAs.** *P. berghei* and *P. yoelii* infected blood samples were purified using a CF11 cellulose column<sup>47</sup>. *P. falciparum* 3D7 was grown in recently collected donor erythrocytes in RPMI based complete malaria culture medium (CMCM) according to the recommendations of the Malaria Research and Reference Reagent Resource Center (MR4). *Plasmodium* RNAs were then isolated using Trizol from infected erythrocytes according to manufacturer's instructions. Briefly, RIG-I Ligand 3pRNA was an *in vitro* transcribed blunt ended ppp-dsRNA 48-mer based on the GFP2 sequence<sup>48</sup>. For HCV RNA Synthesis p90/HCVFL-long pU, an infectious HCV cDNA clone consisting of the consensus cDNA of HCV genotype 1a isolate H77<sup>49</sup>, was used to create a high copy number derivative in the

pUC19 vector backbone (pUC/H77FL-X). pUC/H77FL-X includes a 5' T7 promoter and a unique XbaI run off site for production of full-length RNA transcripts. A replication-defective derivative (pUC/H77FL-X pol-) was created by mutating polymerase active site residues GDD to AGG. Transcript RNA was synthesized by in vitro transcription as described previously<sup>50</sup>. Briefly, plasmid DNA was linearized with XbaI and purified with the MinElute PCR purification kit (Qiagen Sciences, MD). Linearized template DNA was transcribed using the T7 RiboMAX Express large-scale RNA production system (Promega, WI) according to the manufacturer's recommendations. Transcript RNA was treated with DNase I and purified using an RNeasy mini kit (Qiagen Sciences). RNA integrity was confirmed by agarose gel electrophoresis.

**RNA quality control.** RNAs ( $1\mu\text{g lane}^{-1}$ ) were resuspended in RNA loading buffer (Fermentas) and denatured for 5 min at  $65^\circ$ , then chilled on ice. Samples were run on a standard TAE (0.8%) gel (Ultrapure Agarose from Invitrogen, RNase free TAE from Carl-Roth) at  $5\text{ V cm}^{-1}$  for 1h. The gel was subsequently stained with Ethidium Bromide and visualized by UV transillumination. Size Standards were from Fermentas (Generuler DNA Ladder Mix, 100 bp–10 kb and RibuRuler High Range RNA ladder 0.2–6 kb).

**Stimulation of dendritic cells and hepatocytes.** 3pRNA, poly(I:C) and total *P. falciparum*, *P. berghei* and *P. yoelii* RNA samples were transfected with Lipofectamine 2000 (Invitrogen) according to manufacturer's instructions. Briefly, 200 ng RNA were complexed to  $0,6\ \mu\text{l}$  transfection reagent in  $50\ \mu\text{l}$  of Opti-MEM. Following 20 min incubation at room temperature (RT), complexes were added to cells. Supernatants were collected 18 h after transfection.

**Mouse IFN- $\alpha$  and IFN- $\beta$  ELISA.** IFN- $\alpha$  and IFN- $\beta$  levels were determined using a sandwich ELISA. Rat monoclonal antibody to mouse IFN- $\alpha$  and IFN- $\beta$  (clone RMMA-1 for IFN- $\alpha$  and clone RMMB-1 for IFN- $\beta$ ) was used as capture antibody, rabbit polyclonal antibody to mouse IFN- $\alpha$  and IFN- $\beta$  was used for detection (both from PBL Biomedical Laboratories) and HRP-conjugated donkey anti-rabbit IgG (Jackson ImmunoResearch Laboratories) was used as secondary reagent. Recombinant mouse IFN- $\alpha$  and IFN- $\beta$  (PBL Biomedical Laboratories) was used as standard.

**In vivo injection of RNAs in mice.** RNAs were hydrodynamically transfected intravenously with naked RNA.

**Immunohistochemical staining of liver sections.** Livers were fixed with 4 % PFA at RT for 2 h. The fixed liver lobes were cut into  $40\ \mu\text{m}$  thick sections using the Vibratome VT 1000 S (Leica). Liver sections were blocked in 2% BSA and 0,3% Triton for 4  $^\circ\text{C}$  overnight. Following primary antibodies were used to stain liver sections: rabbit anti-GFP polyclonal antibody, ALEXA Fluor 488 (1:400) (Invitrogen) to stain for GFP expressing liver stage parasites; chicken anti-lacZ polyclonal antibody (1:1000) (Abcam, ab9361) to stain for  $\beta$ -galactosidase, rabbit polyclonal anti-MSP-1 antibody (kindly provided by Tony Holder); goat anti-*P. berghei*-UIS4 (1:1000)<sup>51</sup>, kindly provided by M. Seabra and mouse anti-*Pb*-HSP70 (2E6, 1:1000)<sup>52</sup>. Incubations were performed at room temperature for about 6

hours or at 4 °C overnight respectively. Appropriate fluorescent tagged secondary antibodies were used for detection. Cell nuclei were stained with 4'6'-diamidino-2-phenylindole (DAPI). Stained liver sections were placed on microscope slides and mounted with 24 x 60 mm cover slips using Fluoromount-G™ (SouthernBiotech). All Images were acquired on LSM 510 META confocal laser point-scanning microscope (Zeiss).

**Definition of Infiltrates for scoring.** Intrahepatic parasites were defined to be associated with infiltrates when the infected cells were in contact with >3 immune cells. Immune cells were identified by DAPI staining, based on their cytologic aspect (size of the cell and nucleus:cytoplasmic ratio).

**Quantification of  $\beta$ -galactosidase expression in liver sections of *Ifit1-lacZ* reporter mice.** Images were acquired using a Zeiss LSM 510 confocal and a 40 x water objective. Imaging settings which would prevent saturated pixels were determined on the infected slices (where the IFIT-lacZ signal was strongest). Identical settings were subsequently used for all images. 15 parasites (equidistant from the top of the slice, based on DAPI-intensity from hepatocyte nuclei) were imaged in each liver taken per mouse. In the uninfected controls, 15 images of identically sized fields of view randomly distributed throughout the specimens were acquired. Two mice were used for each condition, so 30 images were analyzed for both conditions. The mean fluorescence intensity (MFI) of the  $\beta$ -galactosidase staining for each image was determined. The mean value of MFI (mean fluorescence intensity) of the pictures of infected samples was compared to the mean MFI of non-infected and given as respective fold-induction. Image analysis was performed in the LSM Image Browser (Zeiss) and Fiji image processing package.

**Blood transfer experiments.** C57BL/6J mice were injected intravenously with  $5 \times 10^4$  *P. berghei* GFP expressing sporozoites. At 42 h and 48 h after infection the mice were bled by cardiac puncture using heparin ( $100 \text{ units ml}^{-1}$ ) as an anticoagulant. Approximately 0.8 ml of blood was obtained from each mouse. One fourth (corresponding to about 200  $\mu\text{l}$ ) of the recovered blood was injected intravenously into each recipient mouse. Recipients were monitored for the presence of erythrocytic stage parasites by Giemsa-stained blood smears and FACS to determine the percentage of infected red blood cells until day 12 after blood inoculation.

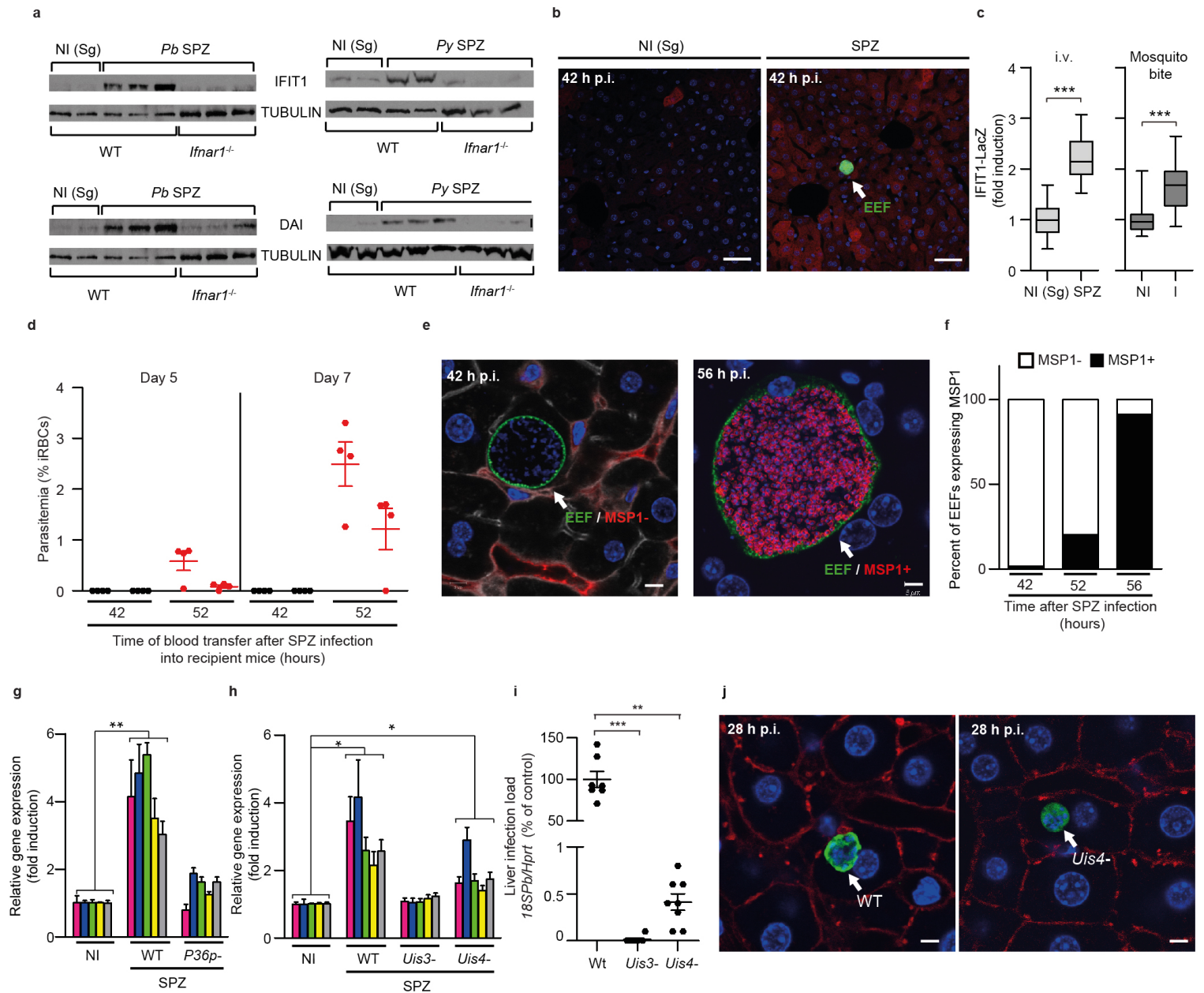
**Statistical Analysis.** Data are expressed as means  $\pm$  standard error. Statistically significant differences between two different groups were analyzed using the Mann Whitney test except when specified otherwise.  $P < 0.05$  were considered statistically significant, except when specified otherwise. Significances are represented in the figures as follows \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ . All statistic tests were performed using Graph Prism 5.0 Software.

## References

38. Kamphuis, E., Junt, T., Waibler, Z., Forster, R. & Kalinke, U. Type I interferons directly regulate lymphocyte recirculation and cause transient blood lymphopenia. *Blood* **108**, 3253-3261 (2006).



39. Franke-Fayard, B., *et al.* A *Plasmodium berghei* reference line that constitutively expresses GFP at a high level throughout the complete life cycle. *Mol Biochem Parasitol* **137**, 23-33 (2004).
40. Ploemen, I.H., *et al.* Visualisation and quantitative analysis of the rodent malaria liver stage by real time imaging. *PLoS One* **4**, e7881 (2009).
41. Irizarry, R.A., *et al.* Exploration, normalization, and summaries of high density oligonucleotide array probe level data. *Biostatistics* **4**, 249-264 (2003).
42. Carvalho, B.S. & Irizarry, R.A. A framework for oligonucleotide microarray preprocessing. *Bioinformatics* **26**, 2363-2367 (2010).
43. Gentleman, R., *et al.* limma: Linear Models for Microarray Data. in *Bioinformatics and Computational Biology Solutions using R and Bioconductor* 397-420 (Springer New York, 2005).
44. Falcon, S. & Gentleman, R. Using GOSTats to test gene lists for GO term association. *Bioinformatics* **23**, 257-258 (2007).
45. Goncalves, L.A., Vigario, A.M. & Penha-Goncalves, C. Improved isolation of murine hepatocytes for in vitro malaria liver stage studies. *Malar J* **6**, 169 (2007).
46. Zhang, W., *et al.* PCB 126 and other dioxin-like PCBs specifically suppress hepatic PEPCCK expression via the aryl hydrocarbon receptor. *PLoS One* **7**, e37103 (2012).
47. Sriprawat, K., *et al.* Effective and cheap removal of leukocytes and platelets from *Plasmodium vivax* infected blood. *Malar J* **8**, 115 (2009).
48. Schlee, M., *et al.* Recognition of 5' triphosphate by RIG-I helicase requires short blunt double-stranded RNA as contained in panhandle of negative-strand virus. *Immunity* **31**, 25-34 (2009).
49. Kolykhalov, A.A., *et al.* Transmission of hepatitis C by intrahepatic inoculation with transcribed RNA. *Science* **277**, 570-574 (1997).
50. Saeed, M., *et al.* Efficient replication of genotype 3a and 4a hepatitis C virus replicons in human hepatoma cells. *Antimicrob Agents Chemother* **56**, 5365-5373 (2012).
51. Lopes da Silva, M., *et al.* The host endocytic pathway is essential for *Plasmodium berghei* late liver stage development. *Traffic* **13**, 1351-1363 (2012).
52. Tsuji, M., Mattei, D., Nussenzweig, R.S., Eichinger, D. & Zavala, F. Demonstration of heat-shock protein 70 in the sporozoite stage of malaria parasites. *Parasitol Res* **80**, 16-21 (1994).

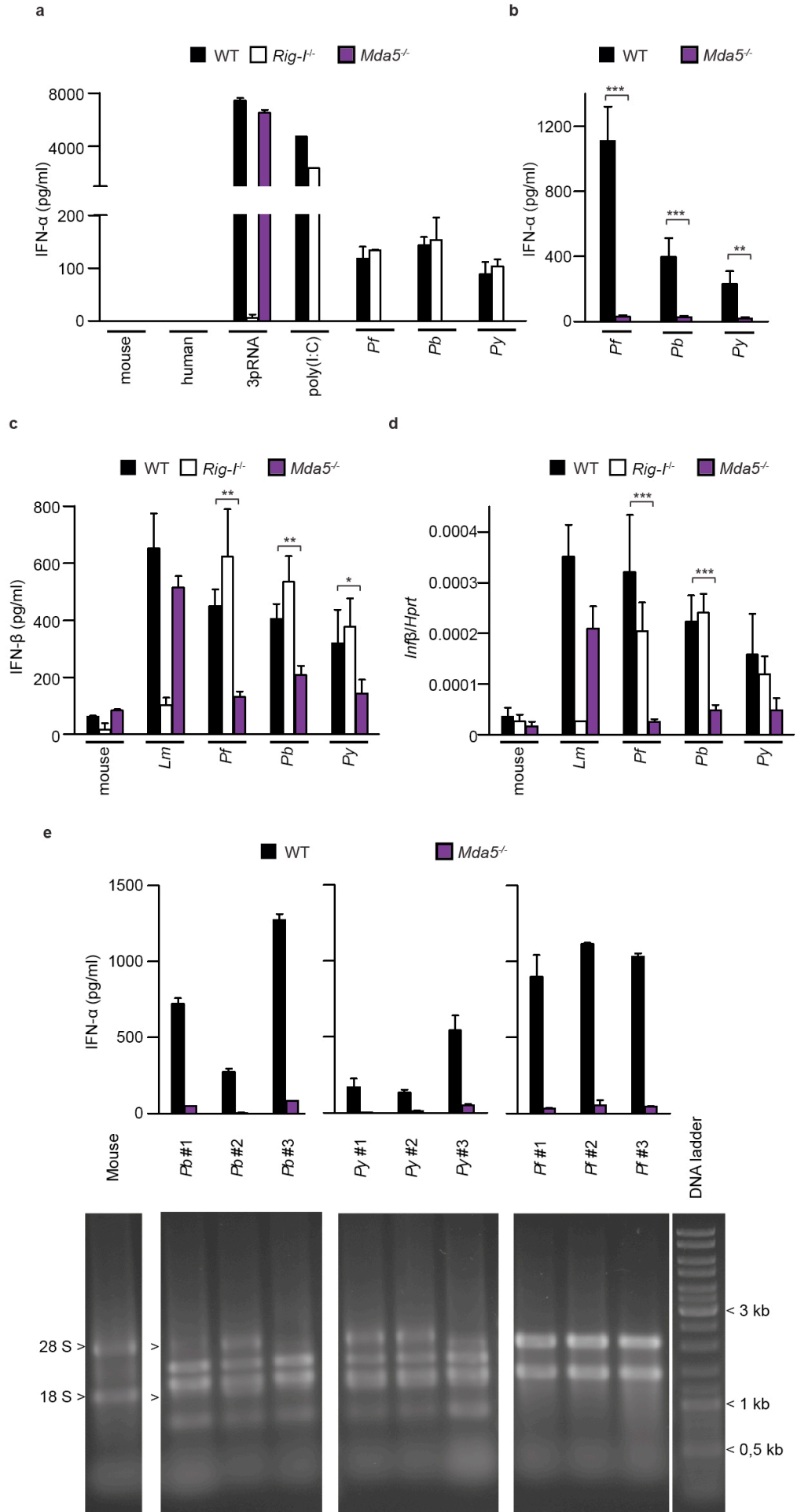


**Supplementary Figure 1. The type I IFN response is induced during parasite replication, prior to merozoite release into the blood.**

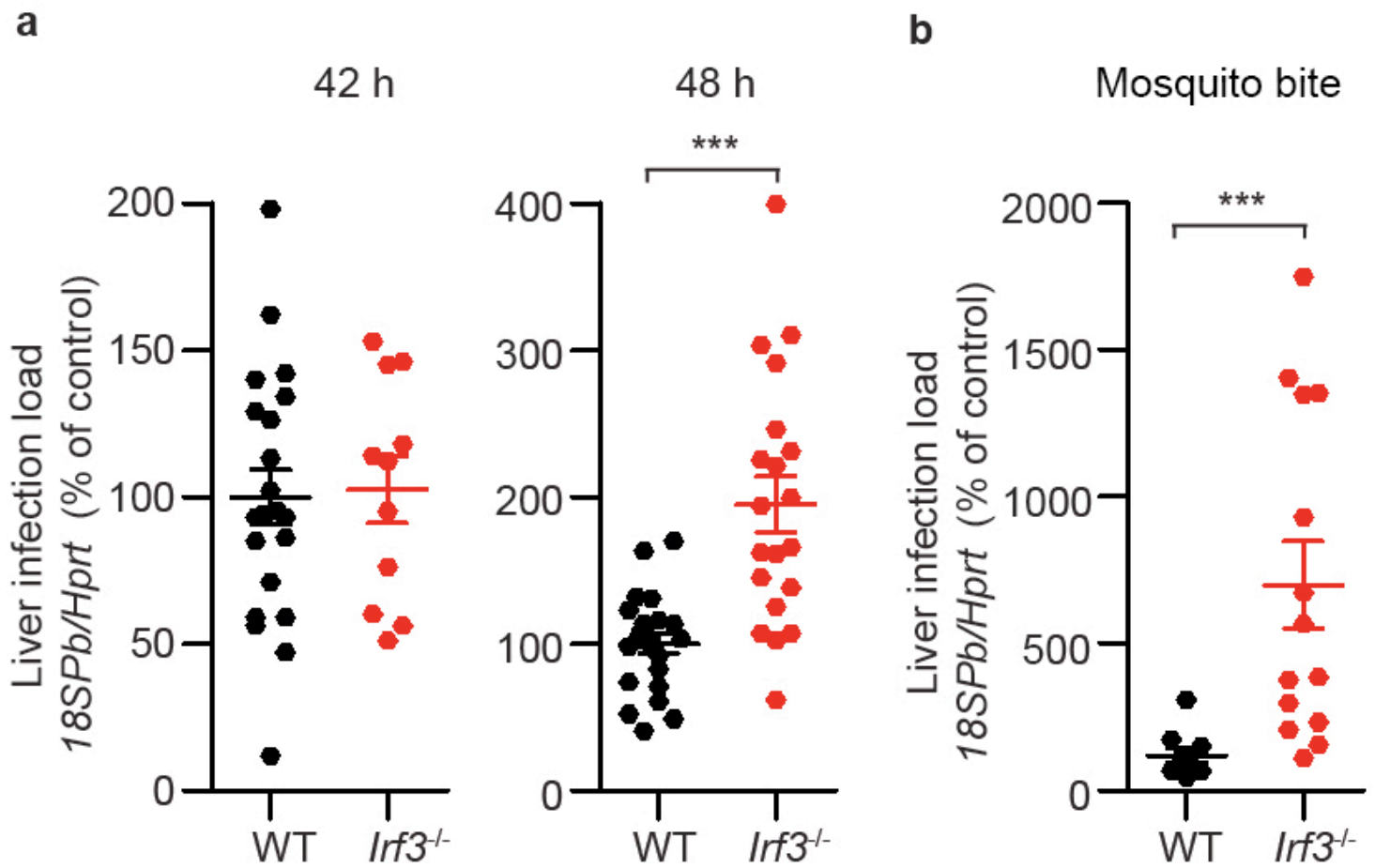
**a**, Protein expression analysis of two representative ISGs (IFIT1 and DAI) on liver extracts of wt and *Ifnar1*<sup>-/-</sup> mice 42 h after infection with  $5 \times 10^4$  *P. berghei*-ANKA (*Pb*) sporozoites. **b**, Immunofluorescence staining of  $\beta$ -galactosidase in liver slices of *Ifit1-lacZ* reporter mice 42 h after infection with  $5 \times 10^4$  *P. berghei* sporozoites. Representative images of  $\beta$ -galactosidase expression (red) in liver slices from infected and non-infected mice are shown. Arrow indicates EEF (exoerythrocytic form) (green); (bar = 40  $\mu$ m). **c**, Quantitative  $\beta$ -galactosidase expression analysis in livers sections of two *Ifit1-lacZ* reporter mice 42 h after infection with  $5 \times 10^4$  *P. berghei* sporozoites or by mosquito bite (25 mosquitos/mouse) respectively and compared to non-infected controls. The mean value of MFI (mean fluorescence intensity) of the pictures of infected samples was compared to the mean MFI of non-infected and given as respective fold-induction (see also supplementary material). **d**, Parasitaemia (Percentage of iRBCs) in recipient mice 5-, and 7 days after blood transfer from donor mice infected with  $5 \times 10^4$  *P. berghei* sporozoites is shown. 42 and 52 h after infection of donor mice, blood was taken by cardiac puncture and one fourth (corresponding to about 200  $\mu$ l) of the recovered blood was injected intraperitoneally into each recipient mouse. **e**, Immunofluorescence images of liver sections stained for MSP1 (red) and UIS4 (green) of wt mice, 42, and 56 h after infection with  $2 \times 10^5$  *P. berghei* sporozoites; UIS4 marks the EEF parasitophorous vacuole membrane; MSP1 marks merozoites; Cell nuclei are stained with 4'6'-diamidino-2-phenylindole (DAPI, blue) and F-actin with phalloidin Alexa647 (white); arrows indicate EEFs (bar = 5  $\mu$ m). **f**, Percentage of EEFs expressing MSP1 in liver sections of wt mice 42, 52, and 56 h after infection with  $2 \times 10^5$  *P. berghei* sporozoites. **g-h**, Gene expression analysis of 5 representative ISGs in livers of wt mice 42 h after infection with  $5 \times 10^4$  of wt, *p36p*-deficient (*p36p*<sup>-/-</sup>), *uis3*-deficient (*uis3*<sup>-/-</sup>) or *uis4*-deficient (*uis4*<sup>-/-</sup>) sporozoites (SPZ). As control, live wt *P. berghei* (**g**) or *P. berghei* NK65 (**h**) sporozoites were used. **i**, Parasite liver load in wt mice, measured by qRT-PCR of *Pb* 18S rRNA, 42 h after infection with  $5 \times 10^4$  with *P. berghei* NK65 wt, *uis3* and *uis4*-deficient sporozoites and plotted as percentage of the levels wt mice infected with wt sporozoites. **j**, Fluorescence images of liver sections stained for *P. berghei*-HSP70 (green) in wt mice, 28 h after infection with  $5 \times 10^4$  *P. berghei* NK65 wt, and *uis4*-deficient sporozoites; Cell nuclei were stained with DAPI (blue) and F-actin with phalloidin Alexa555 (red); arrows indicate EEF (green); (bar = 5  $\mu$ m).

**Supplementary Figure 2. MDA5 senses Plasmodium RNA.**

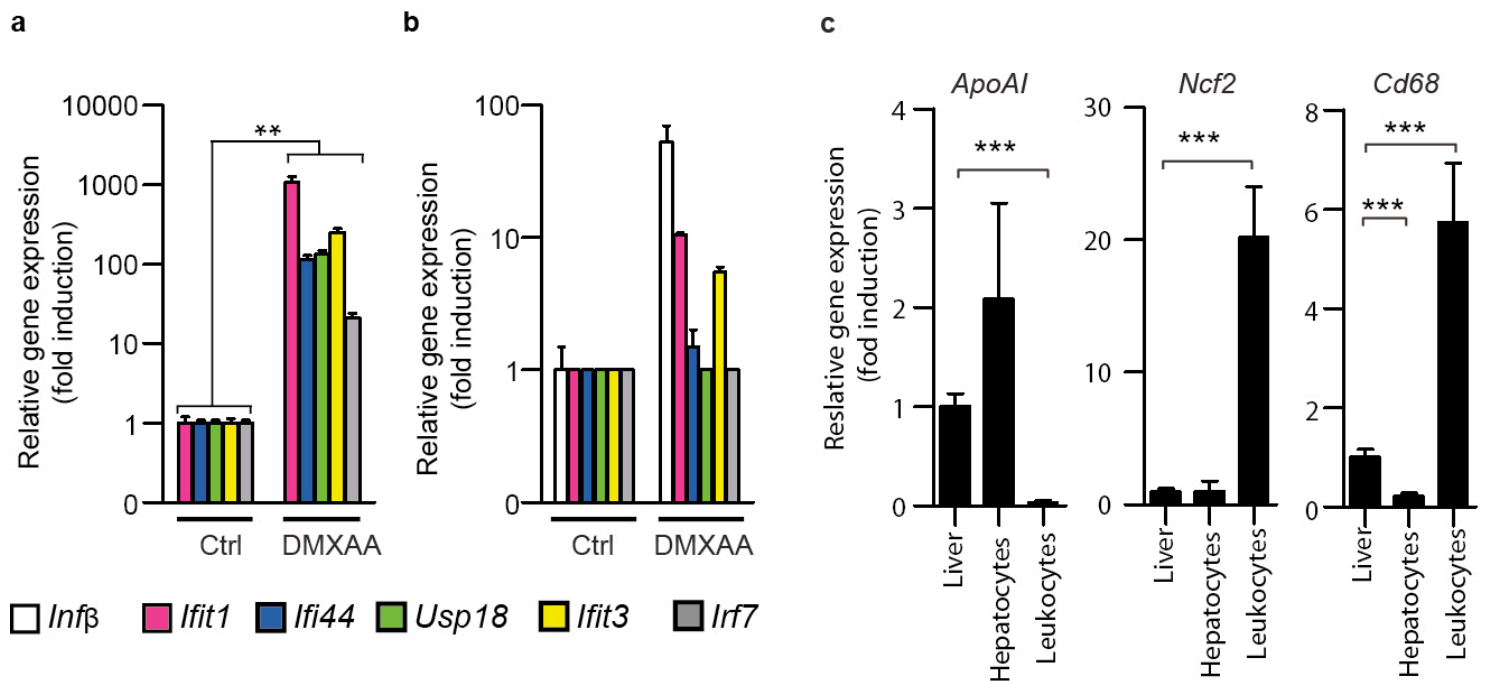
**a**, IFN- $\alpha$  production measured in wt, *Rig-I*<sup>-/-</sup>, and *Mda5*<sup>-/-</sup> BMDCs 18h after transfection with 1 $\mu$ g/ml of 3pRNA, poly(I:C) and total mouse, human, *P. falciparum* (*Pf*), *P. berghei*-ANKA (*Pb*) and *P. yoelii* 17XNL (*Py*) RNA. IFN $\alpha$  was nearly zero in the *Mda5*<sup>-/-</sup> mice; that is the reason why nothing appears on that bar. **b**, IFN- $\alpha$  production measured in wt and *Mda5*<sup>-/-</sup> BMDCs 18h after transfection with 1 $\mu$ g/ml of independent RNA samples of *P. falciparum*, *P. berghei* and *P. yoelii*. **c**, IFN- $\beta$  production measured in wt, *Rig-I*<sup>-/-</sup> and *Mda5*<sup>-/-</sup> primary hepatocytes 18h after transfection with 1 $\mu$ g/ml of total mouse, *Listeria monocytogenes* (*Lm*) RNA, and independent RNA samples of *P. falciparum*, *P. berghei* and *P. yoelii*. In this experiment secretion of IFN- $\beta$  (measured in the supernatant by ELISA) was used as a read-out as, like many non-myeloid cells, hepatocytes are unable to release significant amounts of IFN- $\alpha$ . **d**, *Irfn*- $\beta$  gene expression in wt, *Rig-I*<sup>-/-</sup>, and *Mda5*<sup>-/-</sup> primary hepatocytes 4h after transfection with 1 $\mu$ g/ml of total mouse, *L. monocytogenes* RNA, and independent RNA samples of *P. falciparum*, *P. berghei* and *P. yoelii*. **e**, Immunostimulatory activity versus RNA quality control. Three independent RNA samples from *P. falciparum*, *P. berghei* and *P. yoelii* with different immunostimulatory activities were assessed for their integrity on an agarose gel. IFN- $\alpha$  production was measured in wt and *Mda5*<sup>-/-</sup> BMDCs 18h after transfection with 1 $\mu$ g/ml of RNA. *P. falciparum* RNAs from all three preparations induced similar IFN- $\alpha$  production in BMDCs and clear 28S and 18S rRNA bands of the expected size (28S: 4,1 kbp and 18S: 2,1 kbp) are seen. *P. berghei* and *P. yoelii* RNA from all three preparations showed the expected sizes of 28S and 18S rRNA bands (28S: 3,9 kbp and 18S: 2 kbp) but were also contaminated with host RNA to varying degrees. Stimulation of BMDCs with these RNAs shows that lower abundance of host RNA contamination correlates with higher MDA5 activity.







**Supplementary Figure 3. IRF3 is crucial for *in vivo* host defense.** **a**, Parasite liver load in wt and *Lrf3*<sup>-/-</sup> mice measured by qRT-PCR of *P. berghei* 18S rRNA, 42 h and 48 h after infection with  $5 \times 10^4$  *P. berghei* sporozoites and plotted as percentage of the levels in wt mice. **b**, Parasite liver load in wt and *Lrf3*<sup>-/-</sup> mice, measured by qRT-PCR of *P. berghei* 18S rRNA 50 h after infection by mosquito bite infection with 10 mosquitos/mouse and plotted as percentage of the levels in wt mice.



**Supplementary Figure 4. DMXAA activates IFN gene expression.** **a**, Gene expression analysis of 5 representative ISGs in livers of DMXAA- (500  $\mu\text{g}/\text{mouse}$ ) treated wt mice 4 h after injection and compared to mock-treated controls. Expression of individual genes from DMXAA-treated animals was tested against mock-injected control samples. The least significant  $P$  value of all samples is shown,  $**P < 0.01$ . Complete statistics and  $P$  values are provided in Supplementary Table 2. **b**, Gene expression analysis of 5 representative ISGs and *Ifnβ* in mouse primary hepatocytes 2 h after stimulation with 100  $\mu\text{g}/\text{ml}$  DMXAA **c**, Gene expression analysis by qRT-PCR of *ApoA1* (hepatocyte marker), *Ncf2* (neutrophil marker) and *Cd68* (macrophage marker) in isolated hepatocytes, leukocytes or total livers 42 h after infection with with  $5 \times 10^4$  *P. berghei* sporozoites. Complete statistics and  $P$  values are provided in Supplementary Table 2.

## Supplementary Table 1

List of genes induced more than 2-fold in the liver.

Gene name	Fig. 1b					
	wt SPZ - wt NI (Sg)			wt NI (Sg)	wt SPZ	<i>Ifnar1</i> -/- SPZ
	P-value	Adj P-value	logFC	Average expression		
Ifit2	0.00000	0.00018	2.11	5.07	7.18	4.64
Usp18	0.00000	0.00021	3.01	6.88	9.89	4.65
Ifit1	0.00000	0.00031	4.05	5.97	10.02	3.72
Rtp4	0.00000	0.00050	2.24	7.65	9.90	5.92
Dhx58	0.00000	0.00068	1.63	6.61	8.24	5.18
Rnf213	0.00000	0.00068	2.47	8.43	10.74	7.68
Irgm1	0.00000	0.00068	1.86	7.76	9.61	7.55
Parp14	0.00000	0.00068	2.20	6.72	8.92	6.29
Oasl1	0.00000	0.00068	1.97	7.09	9.07	6.22
Slfn5	0.00000	0.00095	1.19	6.41	7.60	5.32
Oasl2	0.00000	0.00189	1.48	6.50	7.98	5.35
Rsad2	0.00000	0.00189	2.78	6.74	9.53	5.43
Parp9	0.00000	0.00189	1.24	7.73	8.98	7.45
Cxcl10	0.00000	0.00194	1.51	6.51	8.02	6.34
Ddx60	0.00000	0.00215	2.08	5.71	7.79	4.28
Gbp6	0.00000	0.00215	2.62	8.14	10.76	7.70
Ddx58	0.00000	0.00215	1.60	7.81	9.40	7.26
Isg15	0.00000	0.00215	2.07	5.60	7.66	5.12
Cmpk2	0.00000	0.00216	2.16	6.03	8.19	4.95
Ifit3	0.00000	0.00221	2.50	5.83	8.32	4.07
Gbp7	0.00000	0.00228	1.54	7.34	8.88	6.82
ApoI9b	0.00000	0.00228	1.35	10.12	11.46	7.86
Herc6	0.00000	0.00243	1.56	6.95	8.51	6.34
Pyhin1	0.00000	0.00243	1.27	3.95	5.22	3.11
Ifih1	0.00000	0.00259	1.52	7.66	9.19	6.99
Samd9l	0.00000	0.00259	2.16	5.49	7.65	4.29
Irgm2	0.00000	0.00262	1.97	7.92	9.89	7.90
Irf9	0.00000	0.00262	1.06	7.81	8.87	6.99
Adar	0.00000	0.00262	1.11	7.13	8.24	6.77
Stat1	0.00000	0.00262	1.75	8.08	9.83	7.89
Cpeb2	0.00000	0.00267	1.49	8.20	9.69	8.06
Ifi44	0.00000	0.00300	2.79	6.50	9.29	4.39
Xaf1	0.00001	0.00329	1.96	5.11	7.07	4.13
ApoI9a	0.00001	0.00329	1.47	9.78	11.25	7.39
Eif2ak2	0.00001	0.00329	1.67	6.46	8.13	5.99
Zc3hav1	0.00001	0.00333	1.15	7.38	8.53	7.24
Trim30d	0.00001	0.00344	2.46	5.10	7.56	4.32
Trim30a	0.00001	0.00354	2.09	6.68	8.77	6.06
Map3k13	0.00001	0.00363	1.32	6.57	7.89	7.10
Oas1g	0.00001	0.00523	1.12	5.96	7.07	4.42
Cdkn1a	0.00001	0.00543	2.34	5.68	8.02	6.35
Zbp1	0.00001	0.00559	1.65	6.14	7.79	5.85
Pml	0.00001	0.00602	1.15	7.07	8.22	7.00
Chic1	0.00003	0.00828	1.38	4.88	5.71	5.10
Trim12a	0.00003	0.00865	1.67	6.56	8.22	6.06
Iigp1	0.00004	0.00955	1.09	10.30	11.39	9.85
Mpeg1	0.00004	0.00984	1.06	8.28	9.34	8.12
Fam46a	0.00004	0.00992	1.16	6.73	7.76	6.06
Nampt	0.00004	0.00992	1.08	8.16	9.25	7.99
Gbp3	0.00004	0.00992	1.87	6.57	8.44	6.07
Trim12c	0.00005	0.01031	1.26	5.73	7.09	5.37
Aim1	0.00005	0.01075	1.10	6.68	7.07	6.60

Pdk4	0.00006	0.01164	1.63	5.78	7.41	6.43
Ifi204	0.00008	0.01316	1.25	6.18	7.43	5.32
Irf7	0.00008	0.01316	1.45	8.19	9.64	5.84
Gvin1	0.00008	0.01316	1.70	6.58	8.28	6.13
Igfbp1	0.00008	0.01316	2.02	9.16	11.19	9.49
Ifi47	0.00009	0.01316	1.05	6.23	7.28	6.27
Ms4a6c	0.00011	0.01448	1.00	6.02	7.03	5.38
Gm12250	0.00015	0.01600	1.84	6.09	7.93	5.89
I830012O16Rik	0.00016	0.01625	2.04	4.32	6.36	3.76
Angptl4	0.00018	0.01750	1.03	9.45	10.47	8.89
Olfir1034	0.00022	0.01779	1.14	6.57	7.71	6.56
Npas2	0.00028	0.02008	1.15	4.97	6.12	5.82
9930111J21Rik2	0.00031	0.02042	1.07	5.10	6.16	4.96
Hsph1	0.00031	0.02042	1.21	7.81	9.03	8.47
Fga	0.00027	0.01972	0.72	9.86	10.81	10.11
Tgtp1	0.00036	0.02143	1.86	6.40	8.19	6.93
H2-T24	0.00038	0.02222	1.38	6.01	7.39	5.34
Gm10768	0.00042	0.02302	1.00	8.44	9.44	8.50
Tra2a	0.00046	0.02384	1.09	6.15	6.73	6.37
Ly6a	0.00048	0.02394	1.10	8.66	9.76	7.02
Gbp11	0.00063	0.02656	1.07	6.55	7.62	6.75
Gbp4	0.00064	0.02685	1.36	6.24	7.60	6.55
BC023105	0.00071	0.02810	2.18	5.85	8.02	6.83
Nfil3	0.00090	0.03114	1.60	6.83	8.43	7.84
Mx2	0.00095	0.03194	2.37	4.95	7.31	4.65
Gm8979	0.00101	0.03254	1.65	4.49	5.91	4.24
Txnip	0.00113	0.03419	1.10	9.35	10.45	8.74
Arntl	0.00123	0.03586	1.20	6.70	7.90	7.58
Gbp9	0.00139	0.03730	1.16	6.11	7.27	5.99
Sfn9	0.00144	0.03781	1.44	4.99	6.44	4.80
Art2b	0.00148	0.03806	1.02	4.58	5.61	5.24
Ifi203	0.00172	0.04111	1.17	6.46	7.63	5.71
Pydc4	0.00214	0.04571	1.46	3.49	4.95	3.05
Oas1b	0.00222	0.04649	1.18	3.95	5.12	3.50



List of genes statistically differentially expressed in the liver.

Gene name	Fig. 1a					
	wt SPZ - wt NI (Sg)			wt NI (Sg)	wt SPZ	<i>Ifnar1</i> -/- SPZ
	P-value	Adj P-value	logFC	Average expression		
Ifit2	0.00000	0.00018	2.11	5.07	7.18	4.64
Usp18	0.00000	0.00021	3.01	6.88	9.89	4.65
Ifit1	0.00000	0.00031	4.05	5.97	10.02	3.72
Rtp4	0.00000	0.00050	2.24	7.65	9.90	5.92
Dhx58	0.00000	0.00068	1.63	6.61	8.24	5.18
Rnf213	0.00000	0.00068	2.47	8.43	10.74	7.68
Irgm1	0.00000	0.00068	1.86	7.76	9.61	7.55
Parp14	0.00000	0.00068	2.20	6.72	8.92	6.29
Oasl1	0.00000	0.00068	1.97	7.09	9.07	6.22
Sfn5	0.00000	0.00095	1.19	6.41	7.60	5.32
Hbb-b1	0.00000	0.00095	-3.20	12.29	9.09	12.42
Hba-a2	0.00000	0.00149	-2.90	11.13	8.23	11.37
Oasl2	0.00000	0.00189	1.48	6.50	7.98	5.35
Hba-a1	0.00000	0.00189	-2.88	11.15	8.27	11.39
Rsad2	0.00000	0.00189	2.78	6.74	9.53	5.43
Parp9	0.00000	0.00189	1.24	7.73	8.98	7.45
Cxcl10	0.00000	0.00194	1.51	6.51	8.02	6.34
Ddx60	0.00000	0.00215	2.08	5.71	7.79	4.28
Gbp6	0.00000	0.00215	2.62	8.14	10.76	7.70
Ddx58	0.00000	0.00215	1.60	7.81	9.40	7.26
Isg15	0.00000	0.00215	2.07	5.60	7.66	5.12
Cmpk2	0.00000	0.00216	2.16	6.03	8.19	4.95
Ifit3	0.00000	0.00221	2.50	5.83	8.32	4.07
Gbp7	0.00000	0.00228	1.54	7.34	8.88	6.82
Apol9b	0.00000	0.00228	1.35	10.12	11.46	7.86
1700055N04Rik	0.00000	0.00228	-1.07	6.55	6.00	6.66
Herc6	0.00000	0.00243	1.56	6.95	8.51	6.34
Pyhin1	0.00000	0.00243	1.27	3.95	5.22	3.11
Ifih1	0.00000	0.00259	1.52	7.66	9.19	6.99
Samd9l	0.00000	0.00259	2.16	5.49	7.65	4.29
Irgm2	0.00000	0.00262	1.97	7.92	9.89	7.90
Lgals3bp	0.00000	0.00262	0.80	9.73	10.53	8.65
Irf9	0.00000	0.00262	1.06	7.81	8.87	6.99
Adar	0.00000	0.00262	1.11	7.13	8.24	6.77
Stat1	0.00000	0.00262	1.75	8.08	9.83	7.89
Cpeb2	0.00000	0.00267	1.49	8.20	9.69	8.06
Trp53inp1	0.00000	0.00300	0.99	9.82	10.81	9.74
Ifi44	0.00000	0.00300	2.79	6.50	9.29	4.39
Xaf1	0.00001	0.00329	1.96	5.11	7.07	4.13
Apol9a	0.00001	0.00329	1.47	9.78	11.25	7.39
Eif2ak2	0.00001	0.00329	1.67	6.46	8.13	5.99
Zc3hav1	0.00001	0.00333	1.15	7.38	8.53	7.24
Trim30d	0.00001	0.00344	2.46	5.10	7.56	4.32
Trim30a	0.00001	0.00354	2.09	6.68	8.77	6.06
Map3k13	0.00001	0.00363	1.32	6.57	7.89	7.10
Nf1	0.00001	0.00387	0.79	7.24	8.02	7.50
Parp12	0.00001	0.00415	0.85	8.35	9.20	7.82
Uba6	0.00001	0.00423	0.62	6.51	7.13	6.82
Jmjd1c	0.00001	0.00490	0.94	7.24	7.86	7.30
Ascc3	0.00001	0.00505	0.97	7.44	8.41	7.55
Oas1g	0.00001	0.00523	1.12	5.96	7.07	4.42
Trappc8	0.00001	0.00523	0.64	8.17	8.81	8.41
Tdrd7	0.00001	0.00543	0.70	7.66	8.36	7.63

Cdkn1a	0.00001	0.00543	2.34	5.68	8.02	6.35
Sgms2	0.00001	0.00543	0.66	8.31	8.97	8.18
A230046K03Rik	0.00001	0.00553	0.82	7.99	8.80	8.03
Zbp1	0.00001	0.00559	1.65	6.14	7.79	5.85
Pml	0.00001	0.00602	1.15	7.07	8.22	7.00
Ahctf1	0.00002	0.00603	0.68	7.19	7.46	7.22
Cyp2a5	0.00002	0.00603	-1.09	10.91	9.82	10.56
Nmi	0.00002	0.00668	0.90	7.36	8.25	7.03
Smarca5	0.00002	0.00668	0.72	7.40	7.95	7.49
Atad2b	0.00002	0.00681	0.78	6.48	7.03	6.59
Ifi2711	0.00002	0.00681	0.73	9.22	9.95	7.01
Slc38a2	0.00002	0.00698	0.79	10.23	11.02	10.13
MacroD2	0.00002	0.00726	-2.07	4.62	4.22	4.70
Pltp	0.00002	0.00748	-0.87	9.88	9.01	9.82
Cyp2a4	0.00002	0.00755	-1.26	11.39	10.13	10.99
Rc3h1	0.00002	0.00828	0.80	7.59	8.23	7.63
Gm7520	0.00002	0.00828	-0.74	8.40	7.66	8.26
Chic1	0.00003	0.00828	1.38	4.88	5.71	5.10
Myo18b	0.00003	0.00828	-0.99	5.57	5.30	5.50
Rtn4r11	0.00003	0.00828	-0.65	7.66	7.01	7.72
Fgfr3	0.00003	0.00845	-0.64	7.80	7.16	7.89
Ptprj	0.00003	0.00845	0.72	8.26	8.83	8.40
Cyp2c55	0.00003	0.00845	-1.08	6.98	5.91	8.05
Cep350	0.00003	0.00865	0.88	6.99	7.65	7.20
Pum2	0.00003	0.00865	0.66	8.16	8.82	8.24
Ptprk	0.00003	0.00865	0.55	8.45	9.00	8.63
Atg2b	0.00003	0.00865	0.69	7.14	7.58	7.19
Gm7609	0.00003	0.00865	0.79	6.29	7.07	5.54
1700020A23Rik	0.00003	0.00865	-0.55	5.30	4.75	5.30
Smc1a	0.00003	0.00865	0.65	8.67	9.32	8.80
Gca	0.00003	0.00865	0.70	6.72	7.41	6.65
Trim12a	0.00003	0.00865	1.67	6.56	8.22	6.06
Siglec1	0.00003	0.00940	0.60	6.76	7.37	6.13
Dnajc13	0.00003	0.00940	0.60	7.24	7.73	7.33
Iigp1	0.00004	0.00955	1.09	10.30	11.39	9.85
Mpeg1	0.00004	0.00984	1.06	8.28	9.34	8.12
4932438A13Rik	0.00004	0.00987	0.72	7.21	7.92	7.90
Prr5	0.00004	0.00992	-0.72	7.18	6.46	6.91
Hsp90aa1	0.00004	0.00992	0.85	10.04	10.87	10.44
Ube2l6	0.00004	0.00992	0.59	8.35	8.94	8.00
Bmpr2	0.00004	0.00992	0.70	7.84	8.54	7.95
Fam46a	0.00004	0.00992	1.16	6.73	7.76	6.06
Nampt	0.00004	0.00992	1.08	8.16	9.25	7.99
Iigp1b	0.00004	0.00992	0.77	9.72	10.49	9.37
Dock6	0.00004	0.00992	-0.81	6.72	6.60	6.81
Gbp3	0.00004	0.00992	1.87	6.57	8.44	6.07
Blvrb	0.00004	0.00997	-0.58	9.53	8.95	9.29
Nipbl	0.00004	0.00997	0.76	7.39	8.15	7.52
Mthfr	0.00004	0.00997	0.79	6.34	6.75	6.66
Trip12	0.00005	0.01031	0.60	9.26	9.86	9.34
Trim12c	0.00005	0.01031	1.26	5.73	7.09	5.37
Aim1	0.00005	0.01075	1.10	6.68	7.07	6.60
Lrp6	0.00005	0.01078	0.51	8.50	9.01	8.58
Mir338	0.00005	0.01083	-0.61	5.99	5.38	5.88
Fam89a	0.00005	0.01083	-0.63	7.50	6.87	7.18
Scd2	0.00005	0.01134	-0.70	6.50	5.81	6.92
Dmxl1	0.00005	0.01164	0.58	7.30	7.88	7.37
Cnot6l	0.00006	0.01164	0.62	8.06	8.68	8.10
BC006779	0.00006	0.01164	0.91	7.73	8.65	7.86

Pdk4	0.00006	0.01164	1.63	5.78	7.41	6.43
Pds5a	0.00006	0.01164	0.51	8.48	8.99	8.76
Dbp	0.00006	0.01171	-2.16	8.67	6.51	7.29
Pafah1b1	0.00006	0.01171	0.51	8.02	8.53	7.98
Npepps	0.00006	0.01179	0.51	7.66	8.17	7.88
Bmp2	0.00006	0.01193	0.59	6.90	7.49	6.71
5730507C01Rik	0.00006	0.01196	-0.65	5.62	4.97	5.55
Abcd2	0.00007	0.01251	-1.60	8.24	6.64	8.53
Phf3	0.00007	0.01251	0.49	8.21	8.71	8.31
Plcb1	0.00007	0.01272	0.65	6.43	7.08	6.68
Trim34a	0.00007	0.01277	0.77	5.18	5.96	4.91
F11	0.00007	0.01289	0.71	8.76	9.48	8.83
Cetn4	0.00007	0.01316	-1.05	5.26	4.68	5.36
St5	0.00007	0.01316	0.61	7.57	8.18	7.86
Ifi204	0.00008	0.01316	1.25	6.18	7.43	5.32
Daam1	0.00008	0.01316	0.70	7.40	8.10	7.72
Pcm1	0.00008	0.01316	0.83	6.57	7.39	6.66
Slc25a10	0.00008	0.01316	-0.53	10.58	10.05	10.57
Fndc3b	0.00008	0.01316	0.67	6.67	7.34	7.21
Rmnd5b	0.00008	0.01316	-0.61	7.95	7.34	8.04
Irf7	0.00008	0.01316	1.45	8.19	9.64	5.84
Tab2	0.00008	0.01316	0.68	9.03	9.72	9.19
Gvin1	0.00008	0.01316	1.70	6.58	8.28	6.13
Rps3a	0.00008	0.01316	0.75	9.06	9.59	9.19
Xrn1	0.00008	0.01316	0.83	6.36	7.19	6.53
Samhd1	0.00008	0.01316	0.88	7.37	8.26	7.22
Unc119	0.00008	0.01316	-0.63	7.40	6.76	7.71
Igfbp1	0.00008	0.01316	2.02	9.16	11.19	9.49
Ldlr	0.00008	0.01316	-0.53	9.67	9.14	9.70
D030056L22Rik	0.00008	0.01316	0.69	5.89	6.58	5.73
Qser1	0.00008	0.01316	0.62	6.23	6.76	6.52
Sf3b4	0.00008	0.01316	0.71	5.91	6.24	5.82
Gpc4	0.00009	0.01316	0.47	8.68	9.15	8.69
Gm15455	0.00009	0.01316	-0.78	8.31	7.53	8.40
Fkbp8	0.00009	0.01316	-0.61	10.53	9.93	10.55
Dst	0.00009	0.01316	0.56	6.08	6.64	6.38
Slc48a1	0.00009	0.01316	-0.63	8.59	7.96	8.65
Mid1ip1	0.00009	0.01316	-0.80	8.67	7.87	8.54
Lpp	0.00009	0.01316	0.89	6.43	6.84	6.59
Tor3a	0.00009	0.01316	0.85	6.34	7.20	6.17
Ifi47	0.00009	0.01316	1.05	6.23	7.28	6.27
AW822252	0.00009	0.01316	-0.56	7.66	7.10	7.55
Ppip5k2	0.00009	0.01339	0.71	8.75	9.46	8.72
Pip5k1c	0.00009	0.01351	-0.46	7.13	6.67	7.03
Ltbr	0.00010	0.01383	-0.55	8.29	7.74	8.21
Akap13	0.00010	0.01383	0.60	7.51	8.11	7.72
Wnk1	0.00010	0.01383	0.66	7.74	8.40	7.96
Rpl12	0.00010	0.01383	0.49	9.73	10.09	9.73
Fgd4	0.00010	0.01383	0.63	6.84	7.47	7.00
Gadd45a	0.00010	0.01387	-1.05	7.16	6.12	6.92
Fads6	0.00010	0.01394	-0.47	8.81	8.34	8.89
Hc	0.00010	0.01429	0.62	11.42	12.03	11.59
Cltc	0.00010	0.01437	0.69	9.88	10.57	10.14
Il6st	0.00011	0.01442	0.52	9.78	10.30	9.93
Znfx1	0.00011	0.01446	0.80	6.98	7.78	6.82
Ms4a6c	0.00011	0.01448	1.00	6.02	7.03	5.38
Usp32	0.00011	0.01451	0.59	7.76	8.35	7.83
F8	0.00011	0.01460	0.59	7.60	8.19	7.45
Gas6	0.00011	0.01460	-0.54	8.02	7.49	8.22

Zbtb41	0.00011	0.01460	0.47	7.16	7.63	7.03
Rnf217	0.00011	0.01489	0.62	7.19	7.81	7.03
Psd3	0.00011	0.01503	0.62	6.82	7.30	7.07
Lnpep	0.00012	0.01505	0.64	7.75	8.39	7.91
Ell2	0.00012	0.01505	0.50	8.34	8.84	7.90
Atp2a2	0.00012	0.01505	0.75	10.18	10.93	10.42
Pnp2	0.00012	0.01505	0.56	10.61	11.17	10.55
P4ha1	0.00012	0.01505	0.81	6.76	7.58	6.91
Ubr5	0.00012	0.01505	0.46	8.23	8.70	8.39
Birc6	0.00012	0.01505	0.56	8.43	8.99	8.74
Gm4532	0.00012	0.01505	-0.51	6.55	6.05	6.50
Atp11c	0.00012	0.01505	0.48	10.51	10.99	10.41
Lsmd1	0.00012	0.01505	0.57	7.93	8.50	8.00
Wapal	0.00012	0.01523	0.46	8.34	8.79	8.41
Sec24b	0.00013	0.01525	0.52	7.08	7.60	7.28
Zfr	0.00013	0.01555	0.62	7.59	8.21	7.71
Fam73b	0.00013	0.01555	-0.53	8.29	7.77	8.22
Insr	0.00013	0.01555	0.74	8.82	9.41	8.93
Dnmbp	0.00013	0.01555	0.98	6.95	7.93	6.98
D14Abb1e	0.00013	0.01560	0.88	7.60	8.48	7.52
Cebpz	0.00013	0.01560	0.45	6.72	7.17	6.86
Tbc1d8b	0.00013	0.01560	0.58	7.70	8.28	7.77
Ifi35	0.00013	0.01560	0.85	7.66	8.51	7.41
Carhsp1	0.00014	0.01560	-0.64	9.23	8.85	9.21
Myo1b	0.00014	0.01560	0.51	10.05	10.56	9.97
Cpd	0.00014	0.01560	0.48	7.10	7.59	7.47
Dync1h1	0.00014	0.01560	0.54	7.80	8.35	8.12
Abca8b	0.00014	0.01574	0.58	8.09	8.68	8.43
Pcgf5	0.00014	0.01574	-0.45	6.54	6.51	6.57
Ash1l	0.00014	0.01574	0.77	7.15	7.92	7.42
BC056474	0.00014	0.01574	0.68	7.81	8.49	7.89
Rfng	0.00014	0.01574	-0.55	7.19	6.64	7.23
Vhl	0.00014	0.01574	-0.47	6.87	6.40	6.82
Spcs1	0.00014	0.01574	0.49	9.61	10.10	9.64
Mtus1	0.00014	0.01586	0.47	8.69	9.16	8.82
Stip1	0.00015	0.01597	0.65	8.73	9.38	8.98
Taok1	0.00015	0.01597	0.73	7.35	7.98	7.51
Zcchc6	0.00015	0.01600	0.52	9.02	9.54	9.09
Gm12250	0.00015	0.01600	1.84	6.09	7.93	5.89
Pcsk9	0.00015	0.01600	-0.50	7.26	6.76	7.14
Mpp5	0.00015	0.01602	0.49	6.84	7.32	6.76
Mir30d	0.00015	0.01602	0.54	5.83	6.37	5.90
3110053B16Rik	0.00015	0.01602	-0.55	4.47	4.21	4.37
Cmah	0.00015	0.01602	0.58	9.61	10.19	9.71
Rpl26	0.00015	0.01602	0.54	7.30	7.84	7.40
Eif3a	0.00015	0.01602	0.51	9.72	10.23	9.87
Brwd3	0.00016	0.01625	0.50	6.10	6.60	6.32
Enpp4	0.00016	0.01625	0.90	7.24	8.14	7.26
Arl5c	0.00016	0.01625	-0.45	5.54	5.09	5.45
Huwe1	0.00016	0.01625	0.56	8.16	8.73	8.54
I830012O16Rik	0.00016	0.01625	2.04	4.32	6.36	3.76
Nbas	0.00016	0.01643	0.53	6.87	7.36	7.01
Trp53inp2	0.00016	0.01643	0.46	8.70	9.17	8.65
Ap3b1	0.00016	0.01643	0.42	8.29	8.71	8.17
Ahsa2	0.00017	0.01658	0.60	7.46	7.88	7.66
Rsf1	0.00017	0.01677	0.67	6.47	7.14	6.64
Myo1e	0.00018	0.01725	0.67	9.01	9.68	9.00
Ube4b	0.00018	0.01741	0.43	8.14	8.57	8.13
Arfgef1	0.00018	0.01750	0.57	8.12	8.70	8.26



Ltn1	0.00018	0.01750	0.66	7.29	7.83	7.41
Dennd5b	0.00018	0.01750	0.48	8.29	8.76	8.13
Serpina9	0.00018	0.01750	0.60	4.22	4.82	4.79
Tmem33	0.00018	0.01750	0.50	8.87	9.36	8.85
Parp11	0.00018	0.01750	0.78	5.18	5.95	5.09
Angptl4	0.00018	0.01750	1.03	9.45	10.47	8.89
Prrc2c	0.00018	0.01750	0.58	7.37	7.95	7.61
Atrn	0.00019	0.01750	0.51	8.32	8.77	8.46
Ivns1abp	0.00019	0.01750	0.81	8.41	8.83	8.31
Pqlc1	0.00019	0.01750	-0.52	7.23	6.80	7.24
Nab2	0.00019	0.01750	-0.74	8.16	7.42	8.32
Tbl1xr1	0.00019	0.01767	0.70	7.93	8.45	7.64
Nln	0.00019	0.01775	0.47	7.46	7.93	7.33
Ep300	0.00019	0.01775	0.60	6.83	7.44	6.93
Gbp5	0.00019	0.01775	0.75	4.51	5.26	4.70
Ipo7	0.00019	0.01775	0.57	8.83	9.40	8.96
Prkab1	0.00019	0.01775	-0.52	8.13	7.61	8.18
Zfp513	0.00020	0.01777	-0.63	7.01	6.38	7.05
Tars	0.00020	0.01779	0.45	9.31	9.75	9.55
Id3	0.00020	0.01779	-1.29	8.30	7.01	7.93
Txnrd3	0.00020	0.01779	-0.40	6.54	6.14	6.43
Lhpp	0.00020	0.01779	-0.51	10.27	9.76	10.01
Zfp810	0.00020	0.01779	-0.49	6.19	5.70	6.18
Elov3	0.00020	0.01779	0.89	11.53	12.43	11.26
Tbcc	0.00020	0.01779	-0.77	6.06	5.29	6.01
Rps26	0.00021	0.01779	0.39	11.73	12.10	11.79
Rad21	0.00021	0.01779	0.47	8.50	8.97	8.55
Itpr2	0.00021	0.01779	0.59	7.36	7.96	7.68
Sfn2	0.00021	0.01779	0.71	6.22	6.93	5.87
Erap1	0.00021	0.01779	0.57	8.94	9.51	8.90
Ipo11	0.00021	0.01779	0.45	7.58	8.03	7.58
Ifi2712b	0.00021	0.01779	-0.44	7.16	6.72	7.34
Nlrc5	0.00021	0.01779	0.71	6.48	6.83	6.49
Rpl31	0.00021	0.01779	0.41	9.38	9.72	9.44
Fgfr1	0.00021	0.01779	-0.60	7.86	7.26	7.73
AI837181	0.00021	0.01779	-0.66	7.83	7.17	7.59
Dennd4a	0.00021	0.01779	0.43	7.18	7.59	7.26
Pbrm1	0.00021	0.01779	0.66	8.03	8.48	8.05
Tmbim6	0.00022	0.01779	0.48	12.02	12.50	11.99
Olfr1034	0.00022	0.01779	1.14	6.57	7.71	6.56
Dnase2b	0.00022	0.01779	0.40	7.96	8.36	8.04
Ubr4	0.00022	0.01779	0.48	8.31	8.80	8.55
Ufsp1	0.00022	0.01779	-0.52	6.05	5.53	6.37
Smchd1	0.00022	0.01779	0.70	6.71	7.13	6.72
Rpl23a	0.00022	0.01779	0.46	10.00	10.43	10.12
Gucy2c	0.00022	0.01791	-0.40	4.55	4.15	5.06
Tmf1	0.00022	0.01799	0.48	7.35	7.83	7.54
Ppargc1a	0.00022	0.01810	0.77	5.57	6.27	5.48
Ptges3	0.00023	0.01850	0.65	10.25	10.51	10.33
Gm6548	0.00023	0.01872	0.65	8.21	8.86	8.07
Rps15a	0.00024	0.01887	0.60	8.08	8.60	8.15
Ube2l3	0.00024	0.01895	0.41	9.52	9.64	9.50
Mbd3	0.00024	0.01904	-0.39	8.74	8.35	8.88
Gpatch8	0.00024	0.01904	0.71	5.90	6.25	5.96
Fam134a	0.00025	0.01938	-0.53	9.73	9.20	9.63
Chmp7	0.00025	0.01945	-0.51	8.35	7.84	8.42
Zfand4	0.00025	0.01945	0.70	7.20	7.89	6.88
1810010H24Rik	0.00025	0.01945	-0.56	6.42	5.85	6.15
Hspe1	0.00025	0.01945	0.65	10.28	10.94	10.39

Cobl1	0.00025	0.01945	0.50	8.67	9.17	8.68
Spna2	0.00025	0.01945	0.45	8.23	8.68	8.48
Mir199a-1	0.00026	0.01963	-1.14	5.67	4.53	5.68
Mocs1	0.00026	0.01963	-0.38	9.43	9.06	9.25
Cln8	0.00026	0.01963	0.60	7.83	8.43	7.53
Ceacam1	0.00026	0.01971	0.46	10.25	10.71	10.25
Gphn	0.00026	0.01971	0.38	8.97	9.35	8.96
Gclm	0.00026	0.01971	-0.43	10.94	10.51	10.96
Alkbh2	0.00026	0.01971	-0.45	7.00	6.55	7.17
Med13	0.00026	0.01972	0.63	8.05	8.68	8.26
Fga	0.00027	0.01972	0.72	9.86	10.81	10.11
Sp100	0.00027	0.01972	0.98	6.30	7.27	5.77
Gsta1	0.00027	0.01972	-0.65	10.27	9.63	10.52
Pink1	0.00028	0.02008	-0.46	9.56	9.10	9.60
Tmem53	0.00028	0.02008	-0.40	6.87	6.46	7.01
Hsp90ab1	0.00028	0.02008	0.36	11.49	11.85	11.63
Eif5b	0.00028	0.02008	0.54	7.70	8.24	7.86
Mospd1	0.00028	0.02008	0.42	8.69	9.11	8.63
Trdn	0.00028	0.02008	-0.52	3.41	3.51	3.27
Ankfy1	0.00028	0.02008	0.55	7.33	7.87	7.45
Npas2	0.00028	0.02008	1.15	4.97	6.12	5.82
2810459M11Rik	0.00028	0.02008	-0.53	8.38	7.86	8.55
Ireb2	0.00028	0.02020	0.42	9.13	9.56	9.14
Atp6v1b2	0.00029	0.02020	0.37	9.59	9.96	9.63
Papd4	0.00029	0.02020	0.60	7.93	8.41	7.86
Ddost	0.00029	0.02020	-0.37	10.21	9.84	10.07
Ncln	0.00029	0.02020	-0.43	7.65	7.22	7.65
Ywhae	0.00029	0.02027	0.46	9.94	10.39	9.99
Rps21	0.00029	0.02032	0.40	8.40	8.72	8.57
Cryl1	0.00029	0.02034	-0.47	8.88	8.40	8.96
Aff4	0.00030	0.02034	0.49	8.58	9.07	8.71
Arap2	0.00030	0.02034	0.51	6.95	7.46	7.09
G6pc	0.00030	0.02034	0.75	11.56	12.31	11.72
Gorasp1	0.00030	0.02034	-0.78	8.03	7.24	7.86
Ptprd	0.00030	0.02034	0.48	9.61	10.09	9.63
Thap6	0.00030	0.02034	0.40	6.65	7.05	6.62
Mcc	0.00030	0.02034	0.63	8.31	8.94	8.08
BC061237	0.00030	0.02034	-0.99	4.91	3.92	4.67
Wdfy3	0.00030	0.02034	0.62	7.91	8.23	8.04
Tmem131	0.00030	0.02034	0.64	7.59	8.23	7.59
Jak1	0.00031	0.02034	0.42	9.55	9.97	9.69
Ankrd13c	0.00031	0.02034	0.42	7.68	8.09	7.71
Trafd1	0.00031	0.02034	0.72	8.80	9.52	8.63
Zfx4	0.00031	0.02034	0.73	6.25	6.98	6.44
Tor1aip2	0.00031	0.02034	0.59	7.54	7.97	7.38
9930111J21Rik2	0.00031	0.02042	1.07	5.10	6.16	4.96
Hspa8	0.00031	0.02042	0.41	12.07	12.50	12.27
Hsph1	0.00031	0.02042	1.21	7.81	9.03	8.47
Syt15	0.00031	0.02042	-0.42	4.74	4.37	5.35
Mkl2	0.00031	0.02042	0.55	6.92	7.46	7.20
Myeov2	0.00032	0.02042	0.49	8.02	8.51	8.05
Usp17l5	0.00032	0.02065	-0.71	4.64	3.92	4.58
Pigf	0.00032	0.02077	0.43	6.59	7.02	6.73
Eif2s3x	0.00032	0.02079	0.40	9.44	9.84	9.50
Elf1	0.00033	0.02080	0.52	7.14	7.66	7.04
Ankrd17	0.00033	0.02080	0.44	8.09	8.53	8.17
Nfib	0.00033	0.02080	0.45	8.52	9.03	8.66
Snord8	0.00033	0.02080	-0.64	6.11	5.47	6.15
Atp13a3	0.00033	0.02080	0.44	8.01	8.47	8.17

Pikfyve	0.00033	0.02083	0.52	6.84	7.36	6.94
Cyp3a13	0.00033	0.02083	0.46	9.05	9.51	9.15
Pcsk4	0.00034	0.02083	-0.57	6.98	6.41	6.80
Nemf	0.00034	0.02083	0.50	7.19	7.69	7.37
Rab11fip4	0.00034	0.02083	-0.45	5.38	4.93	5.48
Larp1	0.00034	0.02083	0.62	8.94	9.42	9.27
Ampd2	0.00034	0.02083	-0.35	6.23	6.02	6.43
Ifitm3	0.00034	0.02083	0.44	12.06	12.51	11.66
Nags	0.00034	0.02083	-0.40	9.32	8.91	9.42
Dcps	0.00034	0.02083	0.49	7.63	8.12	7.66
Kynu	0.00034	0.02083	0.41	11.56	11.97	11.76
Tmc6	0.00035	0.02118	-0.39	6.57	6.18	6.59
Cyp2b10	0.00035	0.02118	-1.42	7.14	5.72	8.18
Ccdc80	0.00035	0.02132	0.41	7.40	7.81	7.22
Rora	0.00036	0.02136	0.55	8.56	9.11	8.68
Tgtp1	0.00036	0.02143	1.86	6.40	8.19	6.93
Dgat2	0.00037	0.02173	-0.44	11.80	11.36	11.63
Phlpp1	0.00037	0.02215	0.51	6.99	7.50	6.85
H2-T24	0.00038	0.02222	1.38	6.01	7.39	5.34
Ralgapb	0.00038	0.02222	0.45	7.45	7.91	7.64
Pnp	0.00038	0.02222	0.45	9.66	10.11	9.56
Arsb	0.00038	0.02223	0.48	7.34	7.56	7.34
Ncbp1	0.00038	0.02223	0.42	7.87	8.28	8.09
Pigb	0.00038	0.02223	0.37	6.43	6.80	6.63
Jub	0.00038	0.02223	-0.80	6.35	5.54	6.43
Myh10	0.00038	0.02223	0.50	6.43	6.94	6.77
Gnb3	0.00038	0.02223	-0.39	4.92	4.53	4.86
Steap4	0.00039	0.02226	0.56	9.63	10.19	9.90
Lmna	0.00039	0.02236	-0.36	7.54	7.18	7.76
Aldh4a1	0.00039	0.02236	-0.39	10.82	10.43	10.94
Ncoa1	0.00039	0.02238	0.40	6.59	6.99	6.76
Slc41a2	0.00040	0.02269	0.75	8.64	9.39	9.13
Iws1	0.00040	0.02285	0.59	7.22	7.81	7.30
Myst3	0.00040	0.02285	0.43	7.25	7.69	7.34
Clasp2	0.00040	0.02289	0.41	6.28	6.70	6.48
Mal2	0.00041	0.02293	0.43	8.90	9.33	9.43
Map3k5	0.00041	0.02293	0.54	8.14	8.68	7.86
Rpl36	0.00041	0.02293	0.35	9.83	10.10	9.80
Cmip	0.00041	0.02294	-0.43	7.23	7.06	7.31
Tns1	0.00041	0.02294	-1.44	8.10	7.79	8.06
Cldn3	0.00041	0.02294	-0.38	9.41	9.03	9.51
Vsig10	0.00041	0.02294	-0.37	5.55	5.31	5.56
1110037F02Rik	0.00041	0.02294	0.50	6.51	6.92	6.60
Mettl13	0.00042	0.02302	-0.54	6.16	5.62	6.07
Gm10768	0.00042	0.02302	1.00	8.44	9.44	8.50
Smc3	0.00042	0.02302	0.65	7.51	8.16	7.63
Rell1	0.00042	0.02302	-0.41	7.66	7.25	7.85
Farsb	0.00042	0.02302	0.42	8.47	8.89	8.44
Sec24a	0.00042	0.02302	0.51	8.93	9.44	9.16
Prss8	0.00043	0.02302	-0.73	6.57	5.83	6.67
Snord104	0.00043	0.02302	-0.69	9.71	9.03	9.82
Notum	0.00043	0.02302	-0.46	6.47	6.12	6.26
Fndc4	0.00043	0.02302	-0.38	8.27	7.89	8.17
Dpy19l1	0.00043	0.02302	0.56	7.79	8.35	7.76
Unc5cl	0.00043	0.02302	-0.46	5.00	4.54	4.94
Slmap	0.00043	0.02302	0.46	8.05	8.51	8.08
Col14a1	0.00043	0.02302	0.43	8.55	8.98	8.86
Adam10	0.00043	0.02303	0.42	7.56	7.98	7.54
Lrp1	0.00043	0.02303	0.45	10.00	10.46	10.46

Gamt	0.00043	0.02303	-0.44	10.17	9.73	10.00
Bod1l	0.00044	0.02348	0.68	5.40	6.08	5.45
Slc10a2	0.00044	0.02351	0.79	7.17	7.95	8.25
Myl6	0.00045	0.02351	0.37	10.51	10.84	10.61
Rnf145	0.00045	0.02357	-0.36	7.21	6.85	7.60
Cebpa	0.00045	0.02357	-0.42	10.09	9.66	9.97
Eme2	0.00045	0.02357	-0.51	7.59	7.08	7.55
1810035L17Rik	0.00045	0.02357	0.37	7.73	8.11	7.66
AY036118	0.00045	0.02357	-1.32	11.35	10.03	11.56
Slc39a10	0.00045	0.02357	0.84	5.67	6.51	5.57
Setx	0.00046	0.02384	0.43	6.70	7.13	6.96
Tor1aip1	0.00046	0.02384	0.59	7.27	7.86	7.18
Tra2a	0.00046	0.02384	1.09	6.15	6.73	6.37
Dck	0.00046	0.02384	0.53	6.49	7.03	6.40
Slc17a3	0.00047	0.02384	0.49	9.30	9.80	9.28
Trim21	0.00047	0.02384	0.65	6.77	7.42	6.70
Pnpt1	0.00047	0.02384	0.84	7.94	8.77	7.80
Hgf	0.00047	0.02393	0.51	7.15	7.66	6.87
Tmem134	0.00047	0.02393	-0.34	9.05	8.71	8.95
Gm5589	0.00047	0.02394	-0.78	6.22	5.45	6.38
Elmod2	0.00047	0.02394	0.41	7.27	7.69	7.19
Ly6a	0.00048	0.02394	1.10	8.66	9.76	7.02
Utp6	0.00048	0.02394	0.36	7.85	8.21	7.87
Rpl11	0.00048	0.02394	0.34	10.34	10.66	10.40
Zfp746	0.00048	0.02410	-0.39	7.46	7.07	7.46
Mycbp2	0.00048	0.02423	0.55	6.65	7.20	6.92
Gm6644	0.00049	0.02423	0.40	6.99	7.36	6.97
Arhgap42	0.00049	0.02423	0.48	8.39	8.83	8.44
Slc25a33	0.00049	0.02423	0.53	7.02	7.54	6.90
Dub2a	0.00049	0.02423	-2.60	11.62	9.02	11.86
Msl2	0.00049	0.02426	0.55	8.97	9.52	8.98
Snrnp27	0.00049	0.02426	0.41	6.60	7.01	6.62
Shisa5	0.00049	0.02426	0.42	8.37	8.79	8.00
Wee1	0.00050	0.02429	-0.78	6.54	5.76	6.17
Zfp281	0.00050	0.02433	0.58	7.47	8.04	7.47
Uqcrh	0.00050	0.02433	0.57	9.60	10.16	9.68
Vcam1	0.00050	0.02433	0.60	7.05	7.65	6.90
Mpv17l2	0.00050	0.02433	-0.48	8.96	8.48	8.95
Wdr26	0.00050	0.02435	0.35	8.80	9.15	8.87
Tmem68	0.00051	0.02439	0.36	6.33	6.69	6.16
Chd1	0.00051	0.02439	0.45	7.49	7.95	7.61
Gpr146	0.00051	0.02462	-0.76	8.13	7.38	8.21
Ube2w	0.00052	0.02464	0.48	6.99	7.47	6.89
Cnot1	0.00052	0.02466	0.52	7.60	7.88	7.75
ltpk1	0.00052	0.02467	0.47	7.13	7.60	6.98
Lat2	0.00052	0.02467	-0.35	5.28	4.93	5.21
Al182371	0.00052	0.02467	0.38	11.03	11.42	11.06
Slco1a1	0.00053	0.02474	0.42	10.93	11.35	10.42
Gstt3	0.00053	0.02474	-1.00	9.17	8.18	9.07
Tbc1d15	0.00053	0.02474	0.45	8.34	8.79	8.36
Cirbp	0.00053	0.02474	-0.56	8.07	7.51	7.97
2610029I01Rik	0.00053	0.02476	0.44	8.02	8.46	7.83
Polr3k	0.00053	0.02487	0.40	7.33	7.73	7.10
Fzd7	0.00054	0.02487	-0.57	7.50	6.93	7.43
Kcnk3	0.00054	0.02487	-0.41	5.72	5.31	5.77
Ktn1	0.00054	0.02496	0.44	6.38	6.82	6.47
F2r	0.00054	0.02499	0.52	8.20	8.72	7.75
Ctbp1	0.00054	0.02501	-0.35	8.86	8.51	8.82
Cab39l	0.00055	0.02518	0.37	8.79	9.15	8.60



Htt	0.00055	0.02545	0.44	6.58	7.02	6.94
Cwf19l2	0.00056	0.02546	0.40	6.49	6.89	6.65
Lcat	0.00056	0.02546	-0.40	12.00	11.60	11.95
Crebbp	0.00056	0.02553	0.62	7.82	8.45	8.04
Zfp295	0.00056	0.02553	0.42	6.37	6.79	6.71
Mitd1	0.00057	0.02560	0.85	6.83	7.68	6.69
Chrd	0.00057	0.02589	-0.43	5.65	5.22	5.60
Akr1b3	0.00058	0.02592	0.39	6.93	7.32	6.89
Stat2	0.00058	0.02592	0.91	8.28	9.19	8.14
Cecr2	0.00058	0.02597	0.82	6.10	6.92	6.21
Rnf169	0.00059	0.02625	0.47	8.42	8.89	8.28
Fam120aos	0.00059	0.02625	-0.58	6.68	6.10	6.41
Slc25a1	0.00059	0.02634	-0.43	11.26	10.83	11.24
Arl4a	0.00059	0.02634	0.65	6.85	7.50	6.93
Pttg1	0.00060	0.02641	0.47	7.38	7.85	7.47
Ptpn3	0.00060	0.02641	0.52	7.39	7.60	7.67
Zbtb7b	0.00060	0.02641	-0.43	8.22	7.79	8.10
Rdh9	0.00060	0.02641	-0.82	9.54	8.71	8.83
Ipo8	0.00060	0.02641	0.45	8.62	9.07	8.69
Zfp467	0.00060	0.02641	-0.37	6.64	6.26	6.56
Hdlbp	0.00060	0.02641	0.42	10.82	11.25	10.97
Ripk1	0.00061	0.02641	0.39	7.74	8.13	7.87
Lonrf3	0.00061	0.02641	0.99	5.72	6.71	5.96
Lgals9	0.00061	0.02641	0.32	11.78	12.10	11.58
Iqgap2	0.00061	0.02641	0.46	10.30	10.76	10.29
Tas1r3	0.00061	0.02641	-0.35	5.04	4.69	5.04
Arl2bp	0.00061	0.02641	-0.48	7.96	7.48	8.18
Hectd1	0.00061	0.02641	0.53	6.95	7.39	7.00
Cpeb4	0.00061	0.02641	0.70	8.43	9.13	8.56
Lrpprc	0.00061	0.02642	0.41	9.47	9.88	9.60
Hdhd3	0.00062	0.02642	-0.56	7.45	6.88	7.62
Psme4	0.00062	0.02644	0.44	9.20	9.65	9.26
Rbbp6	0.00062	0.02644	0.65	6.35	6.79	6.36
Dnase1l3	0.00062	0.02644	0.40	9.03	9.43	8.71
Kansl1	0.00062	0.02644	0.53	6.31	7.14	6.41
Golgb1	0.00062	0.02645	0.39	6.22	6.61	6.52
Gbp11	0.00063	0.02656	1.07	6.55	7.62	6.75
Stat3	0.00063	0.02656	0.41	9.11	9.52	9.40
Gm10639	0.00063	0.02656	-0.59	9.96	9.37	10.18
Utrn	0.00063	0.02657	0.62	6.77	7.40	7.13
Spsb3	0.00064	0.02685	-0.43	6.98	6.56	6.99
Gbp4	0.00064	0.02685	1.36	6.24	7.60	6.55
Upf2	0.00064	0.02685	0.57	6.75	7.32	6.78
Usp15	0.00064	0.02685	0.52	8.08	8.59	8.22
Itga1	0.00064	0.02685	0.50	7.81	8.30	8.04
Thap2	0.00064	0.02685	0.51	4.94	5.45	4.89
Gfm1	0.00065	0.02685	0.42	9.37	9.79	9.49
Dhx9	0.00065	0.02685	0.59	8.38	8.97	8.65
Senp6	0.00065	0.02685	0.42	8.54	8.96	8.56
Ccdc104	0.00065	0.02685	0.36	7.09	7.45	7.22
Clasp1	0.00065	0.02686	0.37	6.60	6.97	6.79
Gnb2	0.00066	0.02696	-0.42	9.24	8.82	9.22
Arhgap21	0.00066	0.02696	0.41	6.68	7.09	6.86
Ttc17	0.00066	0.02698	0.32	6.81	6.76	6.81
Gck	0.00066	0.02698	-1.58	10.22	8.64	10.02
Kpnb1	0.00066	0.02713	0.53	8.55	9.08	8.81
Jhdm1d	0.00067	0.02717	0.48	7.10	7.62	7.10
2010003K11Rik	0.00067	0.02730	-0.53	6.84	6.31	7.17
Rasgrp4	0.00067	0.02730	-0.54	6.31	6.09	6.40

Ncor1	0.00067	0.02735	0.41	8.40	8.81	8.52
Ncoa6	0.00068	0.02749	0.48	6.34	6.82	6.48
Polr2b	0.00068	0.02749	0.49	8.51	9.00	8.65
Arhgef19	0.00068	0.02757	-0.41	7.62	7.22	7.89
Med22	0.00068	0.02757	-0.41	7.10	6.68	7.14
Tor2a	0.00068	0.02757	-0.38	8.43	8.05	8.36
Rock1	0.00069	0.02760	0.73	7.48	8.21	7.68
Caprin1	0.00069	0.02763	0.37	10.43	10.80	10.57
Npepl1	0.00069	0.02763	-0.54	8.87	8.33	8.89
Ogfr	0.00070	0.02787	0.47	8.76	9.23	8.53
Gatad2b	0.00070	0.02787	0.42	7.53	7.94	7.56
Atf2	0.00070	0.02787	0.40	7.96	8.36	7.98
Casd1	0.00070	0.02805	0.42	8.40	8.82	8.43
BC023105	0.00071	0.02810	2.18	5.85	8.02	6.83
Clpx	0.00071	0.02810	0.58	10.46	11.04	10.61
Rrbp1	0.00071	0.02810	0.59	9.71	10.30	9.96
1110018G07Rik	0.00071	0.02814	0.51	8.86	9.37	8.79
Slc2a5	0.00072	0.02820	-0.50	6.00	5.49	5.36
Tap2	0.00072	0.02820	0.39	7.07	7.46	6.97
Arhgef12	0.00072	0.02820	0.40	6.82	7.15	6.91
Fbxl6	0.00072	0.02820	-0.40	7.91	7.50	7.88
Pacsin3	0.00072	0.02827	-0.43	8.11	7.68	8.20
Btbd2	0.00073	0.02837	-0.49	7.75	7.26	7.60
Tap1	0.00073	0.02837	0.69	7.18	7.87	7.09
Rtf1	0.00073	0.02837	0.31	7.52	7.83	7.53
3110043O21Rik	0.00073	0.02837	0.76	6.67	7.43	6.63
Gstm4	0.00073	0.02837	-0.48	10.70	10.22	10.56
Fat1	0.00073	0.02837	0.54	6.09	6.63	6.69
Serinc1	0.00074	0.02842	0.34	11.71	12.05	11.70
Tcf4	0.00074	0.02842	0.40	6.76	7.16	6.95
Lpin2	0.00074	0.02843	0.87	10.24	11.11	9.95
Lmbrd2	0.00074	0.02845	0.35	9.42	9.77	9.47
Ulk1	0.00075	0.02865	0.31	8.02	8.33	7.90
Ubxn7	0.00075	0.02865	0.48	8.12	8.60	8.00
Xrcc6	0.00075	0.02865	0.39	6.68	7.07	6.72
Epc2	0.00075	0.02872	0.56	6.12	6.68	6.06
Csprs	0.00076	0.02875	0.74	6.12	6.72	5.61
Usp9x	0.00076	0.02875	0.56	9.21	9.76	9.44
C8b	0.00076	0.02875	0.42	11.86	12.29	11.85
Lars	0.00076	0.02875	0.42	7.43	7.85	7.53
Slc12a9	0.00076	0.02882	-0.38	7.09	6.71	7.22
C030046E11Rik	0.00076	0.02882	0.43	7.75	8.19	7.82
Pik3c2a	0.00077	0.02882	0.51	7.84	8.35	8.17
Ahcy12	0.00077	0.02882	0.54	7.42	7.96	7.84
Fbxw9	0.00077	0.02882	-0.48	7.50	7.02	7.59
Igfbp4	0.00077	0.02882	-0.37	11.91	11.54	11.76
Fem1c	0.00077	0.02890	0.58	7.60	8.18	7.72
Cast	0.00077	0.02897	0.37	7.87	8.24	7.89
Ftl1	0.00078	0.02897	0.74	11.99	12.14	12.06
Lrrc14	0.00078	0.02903	-0.51	6.68	6.16	6.71
Cand1	0.00078	0.02908	0.46	8.41	8.87	8.64
Nfia	0.00078	0.02908	0.55	8.02	8.46	8.04
Mia2	0.00079	0.02908	0.42	10.85	11.27	10.65
Slc35a4	0.00079	0.02908	-0.37	6.91	6.53	6.80
Vps13b	0.00079	0.02908	0.60	7.21	7.81	7.57
Enpp5	0.00079	0.02908	0.49	8.04	8.52	7.66
Usp25	0.00079	0.02910	0.32	8.11	8.42	7.93
Piwil1	0.00079	0.02910	-0.39	4.41	4.02	4.35
Rabep2	0.00079	0.02910	-0.38	6.68	6.29	6.74

Tead1	0.00079	0.02912	0.66	6.07	6.40	6.23
Sos1	0.00080	0.02922	0.49	7.06	7.55	7.07
1600027N09Rik	0.00080	0.02940	-0.50	6.00	5.50	6.06
Bbs4	0.00081	0.02940	0.44	4.53	4.97	4.37
Foxo1	0.00081	0.02940	0.61	7.85	8.47	7.79
Egln2	0.00082	0.02969	-0.47	8.92	8.45	8.91
Klhl24	0.00082	0.02969	0.52	9.48	10.01	9.34
Mkl	0.00082	0.02969	0.76	5.66	6.42	5.61
Dapk2	0.00082	0.02969	-0.54	6.91	6.37	6.87
Zfml	0.00083	0.02993	0.64	6.63	7.27	6.71
Fcgr4	0.00083	0.02994	0.78	6.40	7.18	6.32
Bdp1	0.00084	0.03013	0.70	6.47	7.17	6.54
Ppp2r1b	0.00084	0.03027	0.34	7.52	7.85	7.53
Stk19	0.00085	0.03043	-0.36	6.69	6.33	6.57
Myo6	0.00085	0.03052	0.46	8.30	8.76	8.40
D430042O09Rik	0.00086	0.03052	0.56	6.14	6.22	6.10
Flot1	0.00086	0.03052	-0.40	7.23	6.84	7.27
Whsc1l1	0.00086	0.03058	0.69	8.07	8.76	8.03
Gbp2	0.00086	0.03065	0.97	5.89	6.87	6.16
Arl15	0.00087	0.03065	0.63	6.53	7.16	6.84
D19Bwg1357e	0.00087	0.03065	0.36	7.81	8.17	7.82
Fbxo7	0.00087	0.03065	-0.51	7.53	7.27	7.46
9530056K15Rik	0.00087	0.03072	-0.39	4.41	4.02	4.34
Gm5458	0.00087	0.03072	-0.50	3.22	2.99	3.30
Abhd16a	0.00088	0.03085	-0.47	8.24	7.77	8.17
Btaf1	0.00088	0.03091	0.49	7.17	7.66	7.43
Dcaf13	0.00088	0.03091	0.30	7.90	8.20	7.79
Pigu	0.00088	0.03091	0.49	7.68	8.17	7.57
Gsta2	0.00088	0.03093	-0.62	10.05	9.42	10.26
Isl2	0.00089	0.03104	-0.40	5.71	5.31	5.57
Met	0.00089	0.03104	0.34	9.26	9.60	9.23
Nr5a2	0.00089	0.03104	0.33	8.29	8.61	8.27
Ccni	0.00089	0.03105	0.33	9.89	10.03	9.98
Cbx4	0.00090	0.03108	-0.51	7.64	7.13	7.46
Zcchc11	0.00090	0.03114	0.66	7.18	7.83	7.28
Slc25a32	0.00090	0.03114	0.59	8.32	8.90	7.89
Snta1	0.00090	0.03114	-0.43	7.01	6.59	6.99
Nfil3	0.00090	0.03114	1.60	6.83	8.43	7.84
Srebf1	0.00091	0.03117	-0.98	9.30	8.31	9.54
H2-T9	0.00091	0.03117	0.45	9.29	9.74	8.88
Dohh	0.00091	0.03117	-0.37	7.62	7.25	7.73
Gm6484	0.00091	0.03121	-1.86	9.46	7.60	9.38
Slc43a3	0.00091	0.03121	0.29	9.11	9.40	8.76
5031439G07Rik	0.00092	0.03127	-0.54	8.03	7.49	7.85
Mogs	0.00092	0.03130	-0.32	7.84	7.52	7.93
Apof	0.00092	0.03146	0.31	11.42	11.73	11.35
Mcin	0.00093	0.03151	-0.46	5.61	5.16	5.54
Szt2	0.00093	0.03153	-0.30	5.95	5.97	6.13
Itpr1	0.00093	0.03153	0.54	6.23	6.54	6.42
Ttc37	0.00094	0.03165	0.52	7.11	7.62	7.19
Nsd1	0.00094	0.03165	0.48	7.74	8.22	7.90
Atp6v0a1	0.00094	0.03175	0.40	8.23	8.63	8.25
Mx2	0.00095	0.03194	2.37	4.95	7.31	4.65
Atm	0.00095	0.03194	0.68	5.86	6.54	6.03
Hmcn1	0.00096	0.03194	-0.42	4.49	4.46	4.66
Atp6v0c	0.00096	0.03194	-0.36	10.66	10.40	10.71
C2cd3	0.00096	0.03206	0.44	6.73	7.17	6.93
Akap11	0.00096	0.03207	0.59	7.70	8.15	7.86
Apob	0.00097	0.03209	0.33	12.48	12.81	12.66

Cd53	0.00097	0.03212	0.54	7.64	8.17	7.24
Rnf43	0.00097	0.03222	-0.91	7.20	6.29	6.79
Setd2	0.00098	0.03223	0.57	6.86	7.50	7.09
Dhx29	0.00098	0.03233	0.47	6.95	7.42	7.10
2310033P09Rik	0.00098	0.03233	-0.36	6.61	6.34	6.53
Fgd6	0.00098	0.03233	0.64	7.48	8.12	7.68
Avpi1	0.00099	0.03234	-0.39	7.16	6.78	7.17
Pgp	0.00099	0.03234	-0.45	8.39	7.95	8.62
Smcr8	0.00099	0.03243	0.33	7.23	7.56	7.28
Chdh	0.00099	0.03246	-0.39	9.46	9.07	9.67
Zc3h11a	0.00100	0.03248	0.41	9.02	9.43	9.05
Tbc1d8	0.00100	0.03251	0.73	6.95	7.68	6.96
Hivep1	0.00100	0.03251	0.62	6.93	7.55	7.09
Cdc42bpa	0.00100	0.03251	0.48	7.22	7.70	7.37
BC017647	0.00100	0.03251	0.45	7.22	7.67	7.22
Pxk	0.00101	0.03251	0.40	7.83	8.23	7.76
Lmbrd1	0.00101	0.03251	0.40	8.74	9.14	8.74
Tiparp	0.00101	0.03251	0.37	5.46	5.83	5.38
Tradd	0.00101	0.03251	-0.35	7.60	7.25	7.68
Dusp16	0.00101	0.03251	0.41	8.05	8.46	8.11
Stxbp3a	0.00101	0.03252	0.37	7.95	8.16	7.94
Gm8979	0.00101	0.03254	1.65	4.49	5.91	4.24
Yme1l1	0.00101	0.03254	0.39	10.00	10.39	9.95
Fam178a	0.00102	0.03261	0.60	6.74	7.29	6.77
Atp7a	0.00102	0.03271	0.55	6.17	6.72	6.19
Cyp3a44	0.00103	0.03286	-0.46	7.64	7.18	7.93
Slc11a2	0.00103	0.03286	0.44	7.82	8.26	8.06
Mir204	0.00103	0.03286	-0.45	3.10	2.65	3.17
Tmem191c	0.00103	0.03286	-0.37	7.12	6.75	7.16
Tk1	0.00104	0.03294	-0.48	7.47	7.12	7.52
Spnb2	0.00104	0.03294	0.41	8.16	8.57	8.31
Gpx4	0.00104	0.03296	-0.34	10.88	10.54	10.81
Cask	0.00104	0.03296	0.43	7.24	7.67	7.50
Tgoln1	0.00105	0.03306	0.38	10.30	10.68	10.43
Ciapin1	0.00105	0.03306	-0.44	7.48	7.03	7.36
Anpep	0.00105	0.03311	0.52	8.76	9.29	8.85
Socs3	0.00105	0.03311	-0.64	6.24	5.67	6.07
Dvl1	0.00106	0.03311	-0.64	8.41	7.77	8.50
Lama3	0.00106	0.03314	0.42	5.55	5.97	5.48
Hmga2	0.00106	0.03318	-0.41	5.02	4.77	4.91
Psm4	0.00106	0.03318	0.30	8.66	8.96	8.71
Erb2ip	0.00106	0.03318	0.40	9.02	9.42	9.03
Tpr	0.00106	0.03318	0.43	7.90	8.32	8.18
Gpr155	0.00107	0.03318	0.43	8.27	8.70	8.35
Xkr9	0.00107	0.03318	0.41	8.09	8.51	8.07
Inpp4a	0.00107	0.03321	0.33	7.66	7.99	7.75
Gltpd1	0.00107	0.03321	-0.50	7.28	6.78	7.32
Rnf214	0.00108	0.03340	0.43	7.04	7.48	7.06
Pms1	0.00108	0.03340	0.40	6.39	6.79	6.46
Tnfrsf9	0.00108	0.03340	-0.39	5.03	4.64	5.05
Gbf1	0.00109	0.03354	0.47	7.98	8.45	8.14
Ep400	0.00110	0.03364	0.33	6.58	6.91	6.78
Stag1	0.00110	0.03364	0.50	7.53	8.03	7.45
Pik3ca	0.00110	0.03364	0.46	8.43	8.89	8.51
C4bp	0.00110	0.03364	0.33	11.72	12.05	11.64
Msn	0.00110	0.03373	0.47	7.63	8.10	7.61
Uggt1	0.00112	0.03419	0.53	8.53	9.06	8.70
Rpl28	0.00112	0.03419	0.37	10.94	11.29	11.03
Polb	0.00113	0.03419	0.49	6.81	7.30	7.00

Slc12a2	0.00113	0.03419	0.50	6.31	6.81	6.73
Rock2	0.00113	0.03419	0.49	6.95	7.44	6.88
Txnip	0.00113	0.03419	1.10	9.35	10.45	8.74
Dct	0.00113	0.03422	0.30	4.45	4.75	4.14
Rgl3	0.00113	0.03425	-0.30	7.64	7.35	7.84
Serpina7	0.00114	0.03435	-0.54	8.09	7.56	8.74
Rps19bp1	0.00114	0.03435	-0.37	8.24	7.87	8.30
Slc16a11	0.00115	0.03446	-0.44	6.77	6.32	6.35
Ldhd	0.00115	0.03446	-0.46	10.13	9.68	9.92
Snx14	0.00115	0.03452	0.44	7.30	7.46	7.25
Krtap19-7	0.00115	0.03452	-0.56	7.42	6.86	7.42
Zcchc24	0.00116	0.03452	-0.31	8.54	8.23	8.49
Baz1b	0.00117	0.03490	0.34	7.71	8.05	7.87
Evi5	0.00117	0.03490	0.37	9.19	9.57	9.30
Wac	0.00119	0.03534	0.36	8.81	9.17	8.78
Rpl23	0.00119	0.03542	0.35	9.30	9.58	9.41
Lum	0.00120	0.03542	0.39	6.08	6.47	5.53
Ccnb1	0.00120	0.03542	-0.43	4.72	4.28	6.16
Krtap5-2	0.00120	0.03542	-0.70	5.57	5.01	5.64
Gm4841	0.00121	0.03567	0.99	4.51	5.12	4.80
Tprgl	0.00121	0.03567	-0.37	8.83	8.46	8.71
Snord49b	0.00121	0.03567	-0.74	8.40	7.66	8.52
Dicer1	0.00122	0.03568	0.45	7.76	8.21	7.88
Nat15	0.00122	0.03568	-0.33	9.59	9.26	9.55
Ubt2	0.00122	0.03577	-0.46	6.35	5.89	6.43
Tbca	0.00123	0.03582	0.56	8.70	9.27	8.66
Arntl	0.00123	0.03586	1.20	6.70	7.90	7.58
Brd4	0.00123	0.03586	0.32	6.70	7.02	6.79
Cyp3a57	0.00123	0.03589	-0.55	2.91	2.36	2.89
Gnai2	0.00125	0.03616	-0.33	9.34	9.01	9.26
R3hdm2	0.00125	0.03616	0.41	7.33	7.73	7.37
Incenp	0.00125	0.03616	-0.39	4.77	4.38	4.85
Tubb6	0.00125	0.03618	-0.43	6.81	6.38	7.20
Gstm2	0.00126	0.03618	-0.47	8.76	8.29	8.61
Tex2	0.00126	0.03618	0.28	9.62	9.91	9.56
Klf12	0.00126	0.03624	0.40	7.65	8.05	7.84
Aldh16a1	0.00127	0.03631	-0.32	8.11	7.79	8.08
Cux1	0.00127	0.03634	0.29	6.21	6.49	6.31
Cxcl9	0.00127	0.03634	0.80	6.57	7.37	7.21
Thada	0.00128	0.03634	0.55	5.95	6.50	6.10
Ddah2	0.00128	0.03634	-0.45	5.73	5.28	5.54
Kbtbd2	0.00128	0.03634	0.28	7.39	7.67	7.33
Atp2b1	0.00128	0.03634	0.37	8.18	8.55	8.34
Gspt1	0.00128	0.03634	0.38	9.68	10.06	9.71
Atp5d	0.00128	0.03634	-0.33	11.82	11.49	11.87
Cbr2	0.00129	0.03634	-0.42	5.05	4.63	5.09
Oas3	0.00129	0.03634	0.52	5.07	5.58	4.38
Esco2	0.00129	0.03634	0.39	4.08	4.47	4.69
Etnk1	0.00129	0.03634	0.39	8.61	9.00	8.98
Ntmt1	0.00129	0.03644	-0.38	7.51	7.13	7.37
Hook3	0.00130	0.03644	0.40	7.68	8.08	7.81
Adamts6	0.00130	0.03644	0.80	4.19	4.99	3.83
Tle1	0.00130	0.03644	0.48	7.61	8.09	7.47
Pank3	0.00130	0.03644	0.35	8.75	9.10	8.61
Crybg3	0.00131	0.03644	0.46	6.67	7.13	6.98
Pds5b	0.00131	0.03644	0.45	6.30	6.76	6.28
Elk4	0.00131	0.03644	0.38	7.65	8.03	7.78
Cldn5	0.00131	0.03644	-0.58	7.24	6.66	7.27
Mrpl42	0.00131	0.03644	0.78	6.25	7.03	6.68

C630004H02Rik	0.00131	0.03646	-0.34	5.85	5.52	5.89
Abca6	0.00132	0.03650	0.48	10.01	10.49	10.06
Rhox7	0.00132	0.03655	-0.37	5.08	4.71	5.11
Arvcf	0.00132	0.03655	-0.31	6.76	6.45	6.69
Atp8b1	0.00132	0.03660	0.39	8.24	8.64	8.69
Sf3b1	0.00133	0.03669	0.38	8.93	9.31	8.96
Eif4g3	0.00133	0.03670	0.35	7.51	7.86	7.61
Slc35c2	0.00135	0.03714	-0.42	8.02	7.60	8.04
Usp30	0.00135	0.03715	-0.33	7.00	6.67	7.16
Fam49a	0.00135	0.03715	0.64	5.97	6.61	6.12
Cenpf	0.00136	0.03726	-0.32	4.49	4.17	4.82
Atad1	0.00136	0.03726	0.43	8.77	9.20	8.72
4933433P14Rik	0.00136	0.03726	0.45	6.63	7.08	6.33
Kdm5b	0.00136	0.03726	0.41	7.54	7.95	7.72
Jmjd4	0.00136	0.03726	-0.30	6.74	6.43	6.69
Ccdc25	0.00137	0.03726	0.29	8.20	8.49	8.22
Gm10069	0.00137	0.03726	0.58	5.34	5.92	5.37
Slc25a23	0.00137	0.03726	-0.38	10.25	9.87	10.29
Bace2	0.00137	0.03728	-0.48	5.81	5.63	5.65
Smc5	0.00137	0.03730	0.66	7.59	8.26	7.82
Zfp523	0.00138	0.03730	-0.32	6.84	6.52	6.84
Cdk13	0.00138	0.03730	0.51	7.76	8.27	7.84
Rps27	0.00138	0.03730	0.35	9.47	9.81	9.47
Dnajc3	0.00138	0.03730	0.34	11.19	11.53	11.09
Xrcc5	0.00139	0.03730	0.36	8.29	8.65	8.29
Gbp9	0.00139	0.03730	1.16	6.11	7.27	5.99
Strn3	0.00139	0.03730	0.37	7.20	7.57	7.18
Slc25a39	0.00139	0.03730	-0.32	11.80	11.48	11.82
Ube2d2a	0.00139	0.03742	0.40	8.76	9.16	8.79
Nfatc3	0.00140	0.03742	0.43	7.30	7.73	7.36
Rpusd3	0.00140	0.03747	-0.29	7.79	7.50	7.78
Iars	0.00140	0.03747	0.48	7.90	8.29	8.06
Gm4951	0.00140	0.03750	0.73	10.40	11.13	10.32
Asna1	0.00141	0.03753	0.35	8.35	8.69	8.28
Kit	0.00141	0.03753	0.36	6.16	6.53	5.66
Taf1	0.00141	0.03753	0.54	6.13	6.68	6.42
Cnn2	0.00141	0.03753	-0.34	6.45	6.11	6.37
Ing1	0.00142	0.03760	-0.31	7.07	6.75	7.14
Tjp1	0.00143	0.03781	0.42	7.94	8.36	8.00
Lsp1	0.00143	0.03781	-0.31	6.41	6.11	6.58
Thrb	0.00144	0.03781	0.49	7.20	7.69	7.27
Sifn9	0.00144	0.03781	1.44	4.99	6.44	4.80
Zbtb20	0.00144	0.03781	0.45	8.18	8.63	8.26
Tbxa2r	0.00144	0.03781	-0.40	5.74	5.34	5.66
Bmpr1a	0.00144	0.03781	0.51	7.96	8.47	7.94
Grpel2	0.00144	0.03781	0.46	8.52	8.98	8.49
Acads	0.00144	0.03781	-0.33	10.38	10.05	10.25
Slc25a37	0.00145	0.03781	-0.57	7.46	6.90	7.50
Mov10	0.00145	0.03781	0.40	7.97	8.37	7.89
Klhl25	0.00145	0.03781	-0.45	6.55	6.10	6.45
Ptk6	0.00145	0.03781	-0.42	4.34	3.92	4.18
2410075B13Rik	0.00145	0.03781	-0.34	6.75	6.41	6.71
Cdc42se1	0.00145	0.03781	-0.44	7.21	6.77	7.32
F5	0.00145	0.03781	0.37	10.26	10.63	10.34
Ctsd	0.00146	0.03790	-0.31	11.38	11.07	11.40
Polr2a	0.00146	0.03799	0.50	7.02	7.52	7.15
Brd7	0.00146	0.03799	0.33	7.93	8.27	7.78
Lcor	0.00146	0.03799	0.45	8.07	8.52	8.20
Mcoln2	0.00147	0.03802	-0.32	4.52	4.20	4.42

Zkscan1	0.00147	0.03802	0.45	8.20	8.65	8.23
Prpf8	0.00147	0.03802	0.49	9.20	9.68	9.41
Prune	0.00148	0.03802	-0.52	6.55	6.02	6.70
Art2b	0.00148	0.03806	1.02	4.58	5.61	5.24
Mettl9	0.00148	0.03806	0.33	7.23	7.33	7.24
Spn	0.00148	0.03807	0.35	7.38	7.73	7.40
Gja1	0.00149	0.03810	0.67	6.05	6.72	5.89
Gem	0.00149	0.03810	0.51	5.57	6.08	5.13
Rnf31	0.00149	0.03816	0.35	7.00	7.35	6.89
Armcx3	0.00149	0.03816	0.51	7.71	8.09	7.86
Plxnc1	0.00150	0.03816	0.41	7.49	7.90	7.34
Ttc33	0.00150	0.03816	0.40	7.37	7.77	7.42
Krtap5-4	0.00150	0.03826	-0.50	6.48	6.06	6.55
Acot3	0.00150	0.03831	-1.13	6.36	5.23	5.89
Skil	0.00151	0.03837	0.59	6.65	7.23	6.71
Man2a1	0.00151	0.03845	0.43	9.82	10.25	9.95
Utp20	0.00152	0.03845	0.47	6.30	6.77	6.56
Mir504	0.00152	0.03845	-0.48	5.37	4.89	5.31
Pkn2	0.00152	0.03845	0.42	8.47	8.89	8.54
Osmr	0.00152	0.03848	0.78	5.51	6.30	5.69
Eif3c	0.00152	0.03848	0.31	7.63	7.82	7.68
Usp24	0.00153	0.03860	0.48	7.58	7.98	7.77
Gm15772	0.00153	0.03860	0.42	7.60	8.02	7.62
9930021J03Rik	0.00154	0.03869	0.65	6.77	7.05	6.79
Pias2	0.00155	0.03887	0.32	7.83	8.15	7.84
Rab1b	0.00155	0.03893	-0.36	10.40	10.03	10.32
Rtp3	0.00158	0.03947	0.56	7.72	8.08	8.06
Unc45b	0.00158	0.03949	-0.41	4.58	4.42	4.54
Cct2	0.00158	0.03956	0.34	10.09	10.43	10.13
Cnpy3	0.00159	0.03965	-0.37	8.37	8.00	8.18
Akap9	0.00159	0.03969	0.51	7.10	7.61	7.18
Psm10	0.00160	0.03978	0.42	7.49	7.91	7.48
Abce1	0.00160	0.03979	0.34	9.63	9.97	9.67
Rhobtb1	0.00160	0.03979	0.54	8.23	8.77	8.45
Ppm1k	0.00161	0.03983	0.51	9.81	10.32	9.77
Eif3m	0.00161	0.03983	0.38	8.53	8.74	8.38
Ppm1f	0.00161	0.03987	-0.28	7.41	7.13	7.61
Kif5b	0.00162	0.03987	0.31	7.93	8.24	7.95
Arid4a	0.00162	0.03987	0.38	7.03	7.40	7.17
Sltm	0.00162	0.03991	0.33	7.45	7.78	7.46
Grk6	0.00162	0.03991	-0.31	7.33	7.02	7.34
Zfp106	0.00163	0.03995	0.40	7.73	8.13	7.90
Cs	0.00163	0.03995	-0.37	10.15	9.78	10.08
Klhl28	0.00163	0.03995	0.45	6.51	6.96	6.34
Irx6	0.00163	0.03995	-0.30	5.30	5.00	5.31
Upp2	0.00163	0.03995	0.59	10.59	11.18	9.84
Mir298	0.00164	0.04006	-0.63	4.55	3.91	4.53
Ugt2b35	0.00164	0.04006	-0.38	10.34	9.95	10.32
Nup205	0.00164	0.04006	0.50	6.21	6.71	6.44
Mxd4	0.00165	0.04015	-0.34	8.75	8.40	8.83
Ppl	0.00165	0.04020	-0.58	6.42	5.84	6.65
Exosc4	0.00166	0.04024	-0.41	7.08	6.67	7.09
Dek	0.00166	0.04024	0.44	7.90	8.34	7.98
Rccd1	0.00166	0.04024	-0.33	5.34	5.02	5.36
Slc22a4	0.00166	0.04028	-0.35	6.11	5.76	5.85
N4bp1	0.00167	0.04029	0.49	7.38	7.87	7.40
Syncrin	0.00167	0.04039	0.51	8.35	8.86	8.53
Abcb7	0.00168	0.04047	0.41	8.82	9.23	8.83
A830018L16Rik	0.00168	0.04056	-0.40	4.00	3.60	3.85



Alg8	0.00168	0.04058	0.44	7.05	7.49	7.32
Mir652	0.00169	0.04065	-0.54	3.86	3.32	3.82
Anapc13	0.00169	0.04065	0.46	8.29	8.75	8.19
Mblac1	0.00170	0.04079	-0.86	5.44	4.59	5.58
Stag2	0.00170	0.04081	0.57	7.37	7.94	7.36
Gm5037	0.00170	0.04082	-0.38	5.73	5.35	5.72
Cdk12	0.00171	0.04091	0.55	5.97	6.29	6.28
U2surp	0.00172	0.04111	0.36	7.28	7.64	7.30
Ifi203	0.00172	0.04111	1.17	6.46	7.63	5.71
Gabrr2	0.00173	0.04111	-0.47	5.17	4.69	5.27
Irs2	0.00173	0.04111	0.52	5.71	6.23	5.62
Dcxr	0.00173	0.04111	-0.30	9.98	9.68	9.95
Gkap1	0.00173	0.04111	0.40	6.02	6.31	6.21
AF529169	0.00173	0.04111	-0.37	4.66	4.28	4.71
2010106G01Rik	0.00174	0.04111	0.40	10.70	11.10	10.64
Btg3	0.00174	0.04111	0.36	6.49	6.86	6.14
Gar1	0.00174	0.04111	-0.38	7.39	7.01	7.43
LOC382133	0.00174	0.04111	-0.41	4.18	3.82	4.74
Ssh2	0.00174	0.04111	0.59	6.78	7.37	6.67
Gm6878	0.00174	0.04111	-0.45	4.05	3.60	4.25
Xdh	0.00174	0.04111	0.49	9.52	10.01	9.44
Vwa5a	0.00174	0.04111	0.37	7.62	7.99	7.61
Hdac11	0.00175	0.04111	-0.54	8.24	7.71	8.09
Insc	0.00175	0.04111	0.34	6.83	7.18	7.43
Srxn1	0.00175	0.04111	-0.30	8.12	7.82	8.25
Gba2	0.00176	0.04124	-0.42	6.95	6.53	6.62
Apbb2	0.00176	0.04124	0.37	6.97	7.34	7.11
Slc16a2	0.00176	0.04132	0.32	8.55	8.87	8.46
Hspa4l	0.00177	0.04140	0.51	7.08	7.59	7.33
Dnttip1	0.00177	0.04140	-0.30	7.83	7.53	7.84
Homer2	0.00177	0.04140	-0.35	6.50	6.36	6.57
Ino80	0.00177	0.04140	0.58	8.72	9.01	8.83
Cntnap3	0.00178	0.04144	-0.46	3.52	3.34	3.50
0610009O20Rik	0.00178	0.04144	-0.42	7.38	6.96	7.36
Aldh1b1	0.00178	0.04144	-0.37	7.98	7.61	8.63
Usp22	0.00178	0.04148	-0.35	7.54	7.19	7.49
1700013D24Rik	0.00179	0.04148	-0.37	4.04	3.68	4.10
Papola	0.00179	0.04148	0.49	10.00	10.49	9.89
Rpl6	0.00179	0.04148	0.33	9.87	10.17	9.91
Dpy19l4	0.00180	0.04166	0.34	6.79	7.13	6.89
D4Bwg0951e	0.00181	0.04179	0.43	8.74	9.17	8.30
Agphd1	0.00181	0.04181	0.51	8.53	9.03	8.60
Rbck1	0.00181	0.04181	-0.36	8.12	7.77	8.03
Acot1	0.00181	0.04181	0.59	7.75	8.34	7.95
Ms4a6b	0.00182	0.04187	0.92	5.10	6.02	4.88
Tnks2	0.00182	0.04187	0.40	8.09	8.49	8.14
Lin9	0.00182	0.04191	0.37	4.28	4.65	4.37
Mier1	0.00182	0.04195	0.56	7.05	7.61	6.98
Neurod2	0.00184	0.04210	-0.42	5.52	5.10	5.65
Loxl4	0.00184	0.04210	0.70	4.60	5.08	4.94
5430411K18Rik	0.00185	0.04231	0.32	7.37	7.69	7.50
Heg1	0.00188	0.04281	0.37	6.35	6.51	6.52
Zfp592	0.00188	0.04281	0.31	7.83	8.14	7.93
Foxn3	0.00188	0.04281	0.32	8.01	8.13	7.91
Ifna5	0.00188	0.04281	-0.42	5.99	5.57	6.08
Nedd4l	0.00188	0.04281	0.47	8.60	9.07	8.85
Rictor	0.00189	0.04281	0.62	6.92	7.54	7.09
Arl13b	0.00189	0.04281	0.72	5.73	6.46	6.05
Gna11	0.00189	0.04281	-0.27	9.00	8.73	9.04

Ftsjd2	0.00189	0.04293	0.41	8.50	8.92	8.39
Cog5	0.00190	0.04300	0.43	6.84	7.28	6.78
Sf3b3	0.00190	0.04302	0.35	8.39	8.74	8.64
Gdf5	0.00190	0.04302	-0.45	4.04	3.79	4.00
Traf5	0.00191	0.04302	-0.38	5.64	5.27	5.58
Tmem98	0.00191	0.04302	-0.35	7.18	6.82	7.45
Anapc1	0.00191	0.04302	0.40	7.99	8.40	8.02
Epn1	0.00191	0.04306	-0.34	8.78	8.44	8.82
Cerkl	0.00191	0.04310	0.33	4.79	5.12	4.76
Odc1	0.00192	0.04323	0.26	8.49	8.64	8.73
Poldip2	0.00192	0.04323	-0.40	9.96	9.56	10.00
Aass	0.00193	0.04327	0.42	11.11	11.53	11.28
Nol8	0.00194	0.04354	0.47	6.73	7.19	6.89
Epha1	0.00194	0.04354	-0.39	7.67	7.28	7.77
Tef	0.00195	0.04362	-0.75	8.01	7.26	7.59
Nos1ap	0.00196	0.04362	-0.38	5.47	5.20	5.51
Tdeanc2	0.00196	0.04362	0.33	5.86	6.03	5.75
Gpd1l	0.00196	0.04362	-0.33	6.60	6.39	6.52
Dnaja1	0.00196	0.04362	-0.39	9.01	8.98	8.90
Adck3	0.00196	0.04362	-0.30	11.08	10.78	11.03
Miip	0.00196	0.04362	-0.39	7.09	6.69	7.11
Commd5	0.00197	0.04362	-0.44	7.46	7.02	7.41
Zfyve21	0.00197	0.04366	-0.40	8.40	8.00	8.40
Preld1	0.00197	0.04367	-0.36	11.16	10.78	11.13
Msl1	0.00198	0.04368	0.34	6.27	6.49	6.26
Btbd7	0.00198	0.04373	0.54	6.41	6.95	6.53
Krtap8-1	0.00199	0.04387	-0.45	4.07	3.62	4.03
Mfsd12	0.00199	0.04387	-0.54	7.17	6.63	7.25
Eea1	0.00199	0.04390	0.37	7.58	7.95	7.56
P2ry1	0.00200	0.04401	0.38	7.01	7.39	6.89
Mesp1	0.00202	0.04431	-0.34	4.62	4.28	4.58
Txndc17	0.00202	0.04441	0.27	10.13	10.40	10.11
Dfna5	0.00203	0.04441	0.57	4.49	4.62	4.51
Dcp2	0.00203	0.04450	0.35	6.28	6.63	6.12
Slc25a28	0.00204	0.04455	-0.38	7.78	7.40	7.75
2410024N13Rik	0.00204	0.04461	0.72	2.65	3.37	2.93
Ptch1	0.00205	0.04461	0.51	6.90	7.41	7.10
Igk	0.00205	0.04461	0.32	3.61	3.61	3.62
Kdm5c	0.00205	0.04461	0.33	7.81	8.15	8.04
BC029214	0.00205	0.04461	-0.49	8.88	8.39	8.78
Gm7241	0.00205	0.04461	-0.44	4.47	4.03	4.35
Tnfaip2	0.00205	0.04462	-0.85	7.62	6.77	7.97
Fpr3	0.00207	0.04496	0.69	3.97	4.66	4.09
Rsb1l	0.00207	0.04497	0.36	7.17	7.54	7.21
Mars	0.00208	0.04505	-0.38	9.21	8.83	9.21
Dock4	0.00208	0.04505	0.49	7.67	8.17	7.72
Smarca5-ps	0.00209	0.04523	0.36	7.86	8.22	7.93
Psenen	0.00210	0.04526	0.27	10.89	11.16	10.85
Galk1	0.00210	0.04526	-0.49	8.72	8.22	8.72
Acox1	0.00211	0.04542	-0.40	4.82	4.42	4.82
Syne2	0.00211	0.04542	0.67	7.05	7.64	7.38
Ube2v2	0.00211	0.04542	0.66	7.32	7.72	7.33
Zfp361l	0.00212	0.04554	0.88	6.91	7.79	7.02
Pex5	0.00212	0.04554	-0.34	9.57	9.23	9.52
Stam	0.00212	0.04557	0.38	7.80	8.17	7.80
4930471M23Rik	0.00214	0.04571	-0.36	7.47	7.10	7.36
Smarce1	0.00214	0.04571	0.35	8.22	8.52	8.24
Pydc4	0.00214	0.04571	1.46	3.49	4.95	3.05
Hnrnpm	0.00214	0.04571	0.39	9.47	9.86	9.55

Ccdc85c	0.00215	0.04571	-0.32	6.73	6.41	6.58
Agfg1	0.00215	0.04571	0.30	8.53	8.83	8.68
Slc12a5	0.00215	0.04571	-0.51	5.20	4.69	5.01
Slc22a1	0.00215	0.04571	-0.30	11.50	11.20	11.32
A430084P05Rik	0.00216	0.04578	0.35	4.93	5.28	4.91
Tex9	0.00216	0.04578	-0.27	3.89	3.62	3.89
Ubap1	0.00216	0.04578	-0.38	9.65	9.26	9.53
Aldoa	0.00217	0.04592	-0.29	9.99	9.70	10.03
Acer2	0.00217	0.04594	0.53	5.90	6.22	5.82
Snca	0.00217	0.04594	-0.49	5.03	4.54	4.81
Mon2	0.00218	0.04597	0.28	9.11	9.39	9.25
Hsd17b6	0.00218	0.04597	-0.58	12.18	11.60	12.31
Cp	0.00219	0.04625	0.29	12.05	12.34	12.10
Ythdc1	0.00220	0.04629	0.46	7.84	8.30	7.68
Usp47	0.00221	0.04649	0.36	9.15	9.51	9.22
Ubl4	0.00221	0.04649	-0.34	8.32	7.98	8.36
Cyp7a1	0.00221	0.04649	-1.74	10.00	8.27	8.98
Oas1b	0.00222	0.04649	1.18	3.95	5.12	3.50
Atp5l	0.00222	0.04649	0.34	8.76	9.08	8.91
E430025E21Rik	0.00222	0.04649	0.34	7.97	8.31	8.07
Zdhhc1	0.00223	0.04665	-0.37	5.55	5.18	5.42
Larp4	0.00223	0.04665	0.35	7.54	7.85	7.61
Xrcc4	0.00223	0.04668	0.40	7.03	7.42	7.12
Slc25a11	0.00224	0.04669	-0.33	9.17	8.84	9.17
F830002L21Rik	0.00225	0.04697	-0.56	6.94	6.38	7.01
Ctnnd1	0.00226	0.04705	0.33	8.24	8.57	8.34
Rasd1	0.00226	0.04705	0.49	4.80	5.29	4.67
Cenpo	0.00227	0.04705	0.46	6.04	6.26	6.13
Esrp2	0.00227	0.04705	-0.34	8.74	8.40	8.93
Usp7	0.00227	0.04710	0.37	8.36	8.73	8.42
Snx10	0.00227	0.04712	0.33	7.43	7.76	7.15
Gcnt2	0.00228	0.04712	0.40	7.10	7.50	7.14
Rims3	0.00228	0.04712	-0.27	6.39	6.11	6.36
Morf4l1	0.00228	0.04712	0.32	10.22	10.38	10.13
Mia3	0.00229	0.04733	0.41	9.31	9.72	9.30
Smg1	0.00230	0.04748	0.67	7.38	8.04	7.47
Akap10	0.00230	0.04748	0.41	6.59	7.00	6.70
Egfr	0.00231	0.04748	0.67	11.12	11.79	11.23
Sgol2	0.00231	0.04751	-0.34	4.52	4.19	4.97
S1pr3	0.00232	0.04767	0.46	5.34	5.80	5.26
Eif3k	0.00232	0.04767	0.37	8.19	8.56	8.29
Tmem205	0.00232	0.04769	-0.40	11.06	10.65	10.94
Ly6e	0.00233	0.04772	0.46	11.40	11.86	11.03
Mir139	0.00233	0.04772	-0.48	6.64	6.15	6.65
Mirlet7f-2	0.00234	0.04792	0.26	2.93	3.19	2.87
Myo9a	0.00234	0.04794	0.59	4.49	4.82	4.50
Dusp19	0.00235	0.04808	0.50	6.43	6.93	6.47
Mcart1	0.00236	0.04814	0.66	7.73	8.39	7.74
Impa1	0.00236	0.04814	0.38	8.25	8.63	8.21
Hspb1	0.00237	0.04814	0.38	6.25	6.41	6.09
Chrna4	0.00237	0.04814	-0.49	6.00	5.51	6.01
Cyp1a1	0.00237	0.04814	-0.41	4.36	3.95	3.86
Skiv2l2	0.00237	0.04816	0.31	7.63	7.95	7.72
Gfm2	0.00237	0.04816	0.33	8.13	8.47	8.24
Prr13	0.00238	0.04816	0.29	8.10	8.39	8.09
Nup153	0.00238	0.04816	0.42	7.41	7.82	7.50
Snora16a	0.00238	0.04816	-0.78	8.81	8.02	8.66
Tnnt1	0.00238	0.04816	-0.49	4.99	4.49	4.98
G630090E17Rik	0.00239	0.04841	0.38	8.24	8.61	8.51

Gls2	0.00240	0.04841	-0.39	10.98	10.59	11.36
Sec62	0.00240	0.04845	0.25	8.54	8.69	8.42
Arf5	0.00241	0.04861	-0.36	9.31	8.95	9.27
Hmg20a	0.00243	0.04900	0.27	7.08	7.36	7.00
Cct8	0.00244	0.04900	0.34	9.61	9.95	9.62
Sbf2	0.00244	0.04911	0.33	7.92	8.25	7.90
Ptprb	0.00245	0.04911	0.35	8.51	8.86	8.40
1190005F20Rik	0.00245	0.04916	0.62	7.19	7.81	7.43
Fnip1	0.00245	0.04919	0.50	8.34	8.85	8.28
Pcdh1	0.00246	0.04935	-0.32	6.73	6.41	6.85
Smc6	0.00247	0.04935	0.30	7.32	7.62	7.18
Cyp2d40	0.00247	0.04935	0.41	8.32	8.72	7.78
Ptpla	0.00247	0.04935	0.36	6.70	6.89	6.74
Prepl	0.00248	0.04943	0.41	7.77	8.18	7.79
Suv420h1	0.00248	0.04946	0.30	7.05	7.35	7.01
Tfdp1	0.00248	0.04947	0.43	8.05	8.28	8.15
Ighm	0.00248	0.04947	-0.35	3.71	3.59	3.68
Sh3glb2	0.00249	0.04959	-0.47	7.56	7.09	7.48
Rnu2-10	0.00250	0.04969	-0.65	9.11	8.53	9.96
Hmox2	0.00250	0.04970	0.26	8.79	9.05	8.59
Crem	0.00252	0.04987	0.56	6.35	6.92	6.42
Dennd4c	0.00252	0.04987	0.47	7.73	8.20	7.82
Rbm8a	0.00252	0.04987	0.29	9.37	9.67	9.50
2310035C23Rik	0.00252	0.04987	0.32	7.07	7.39	7.04
Gata1	0.00252	0.04987	-0.39	4.19	3.80	4.12
Med28	0.00252	0.04987	0.44	6.98	7.42	6.89
Dars	0.00253	0.04989	0.28	8.56	8.85	8.50
Tmbim4	0.00253	0.04989	0.34	9.16	9.50	9.09
Rab5c	0.00254	0.04995	0.26	8.92	9.18	8.73
Pim1	0.00254	0.04995	-0.56	8.22	7.66	8.17
Inhbe	0.00254	0.04995	-1.20	8.47	7.27	8.03
Mga	0.00254	0.04995	0.60	6.59	7.19	6.72

**Supplementary Table 2.** This tables shows the p Values and number (n) of animals used for each condition, except when specified otherwise

<b>Fig. 1c</b>		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	NI (n=13)	< 0,0001 ***	0,002 ***	< 0,0001 ***	< 0,0001 ***	< 0,0001 ***
	Pb SPZ (n=13)					

<b>Fig. 1d</b>		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	NI (n=12)	0,023 **	0,0009 ***	0,0043 **	0,0009 ***	0,302 ns
	SPZ 1 (n=6)					
wt	NI (n=12)	< 0,0001 ***	< 0,0001 ***	< 0,0001 ***	< 0,0001 ***	0,0002 ***
	SPZ 5 (n=12)					
wt	NI (n=12)	0,0009 ***	0,0009 ***	0,0009 ***	0,0009 ***	0,0009 ***
	SPZ 25 (n=6)					
wt	NI (n=12)	0,515 ns	0,219 ns	0,193 ns	0,515 ns	0,516 ns
	SPZ hi 1 (n=3)					
wt	NI (n=12)	0,398 ns	0,814 ns	0,962 ns	0,707 ns	0,101 ns
	SPZ hi 5(n=6)					
wt	NI (n=12)	0,0362 *	0,169 ns	0,169 ns	0,129 ns	0,942 ns
	SPZ hi 25(n=3)					
wt	NI (n=12)	0,426 ns	0,426 ns	0,0207 *	1 ns	0,011 *
	SPZ irr 1 (n=3)					
wt	NI (n=12)	0,26 ns	0,0001 ***	0,0022 **	0,022 **	0,072 **
	SPZ irr 5(n=12)					
wt	NI (n=12)	0,025 *	0,0115 **	0,0171 *	0,0115 *	0,0115 *
	SPZ irr 25(n=3)					

<b>Fig. 1e</b>		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	NI (n=13)	0.0124 *	0.0057 **	0.0075 **	0.0014 **	0.0156 *
	10 mosquitos (n=3)					
wt	NI (n=13)	< 0.0001 ***	0.0483 *	0.0052 **	0.0006 ***	0.0036 **
	25 mosquitos (n=13)					

<b>Fig. 1f</b>		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	NI (n=34)	0.8931 ns	0.5704 ns	0.3621 ns	0.3318 ns	0.9405 ns
	6h (n=9)					
wt	NI (n=34)	0.8555 ns	0.7793 ns	0.8555 ns	0.1452 ns	0.9219 ns
	18h (n=10)					
wt	NI (n=34)	0.1877 ns	0.7159 ns	0.7288 ns	0.1407 ns	0.2317 ns
	30h (n=7)					
wt	NI (n=34)	0.0124 *	0.0040 **	0.0139 *	0.0031 **	0.0040 **
	36h (n=5)					
wt	NI (n=34)	0.0071 **	0.0011**	0.022*	0.0011 **	0.0035 *
	38h (n=5)					
wt	NI (n=34)	0.0010 ***	0.0020 **	0.0017 **	0.0010 ***	0.0289 *
	40h (n=5)					
wt	NI (n=34)	< 0.0001 ***	< 0.0001 ***	< 0.0001 ***	< 0.0001 ***	< 0.0001 ***
	42h (n=36)					
wt	NI (n=34)	< 0.0001 ***	< 0.0001 ***	< 0.0001 ***	< 0.0001 ***	< 0.0001 ***
	48h (n=18)					
wt	NI (n=34)	< 0.0001 ***	< 0.0001 ***	0.0012 **	0.0003 ***	< 0.0001 ***
	52h (n=11)					

<b>Fig. 1g</b>		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	NI (n=7)	0,0012 **	0,0014 **	0,0003 ***	0,0003 ***	0,0003 ***
	Py SPZ (n=8)					

<b>Fig. 1h</b>		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
C57Bl/6	NI (n=4)	0,028 *	0,028 *	0,028 *	0,028 *	0,028 *
	Pb SPZ (n=4)					
Balb/c	NI (n=4)	0,028 *	0,028 *	0,028 *	0,028 *	0,028 *
	Pb SPZ (n=4)					

<b>Fig. 1i</b>		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
<i>Ifnar1</i> fl/fl	NI (n=10)	0,0001 ***	0,0001 ***	0,0001 ***	0,0001 ***	0,0001 ***
	SPZ (n=14)					
Cre-LysM <i>Ifnar1</i> fl/fl	NI (n=8)	0,0002***	0,0003 ***	0,0002 ***	0,0004 ***	0,0003 ***
	SPZ (n=12)					
Cre-Alb flox <i>Ifnar1</i> fl/fl	NI (n=6)	0,0929 ns	0,0426 *	0,1812 ns	0,1748 ns	0,2284 ns
	SPZ (n=8)					

<b>Supplementary Fig.1c (n= images of liver sections analysed)</b>						
i.v.	NI (5g) (n=30)	< 0,0001 ***				
	Pb SPZ (n=30)					
mosquito bite	NI (n=20)	< 0,0001 ***				
	I (n=20)					

<b>Supplementary Fig.1g</b>		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	NI (n=6)	0,0087 **	0,0022 **	0,005 **	0,005 **	0,0022 **
	SPZ wt (n=6)					
wt	NI (n=6)	1 ns	0,0012 **	0,0149 *	0,0513 ns	0,0023 **
	SPZ p36p (n=7)					

<b>Supplementary Fig.1h</b>		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	NI (n=7)	0,0006 ***	0,0175 *	0,0006 ***	0,0021 **	0,0006 ***
	SPZ wt (n=7)					
wt	wt SPZ (n=7)	0,385 ns	0,7282 ns	0,5621 ns	0,1458 ns	0,0233 *
	<i>uis3</i> - SPZ (n=8)					
wt	wt SPZ (n=7)	0,0022 **	0,0006 ***	0,0289 *	0,0176 *	0,0128 *
	<i>uis4</i> - SPZ (n=8)					

<b>Supplementary Fig.1i</b>		
wt SPZ (n=7)	0.0008 ***	
<i>uis3</i> SPZ (n=8)		
wt SPZ (n=7)	0.0014 **	
<i>uis4</i> SPZ (n=8)		

Fig. 2b		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	SPZ (n=17)	0,0027 **	0,0027 **	0,0027 **	0,0027 **	0,0027 **
<i>Irf7/3</i>	SPZ (n=4)					
wt	SPZ (n=17)	0,0033 **	0,0001 ***	0,0097 **	0,0023 **	0,0001 ***
<i>Irf7</i>	SPZ (n=9)					
wt	SPZ (n=17)	< 0,0001 ***	0,0001 ***	< 0,0001 ***	< 0,0001 ***	0,0001 ***
<i>Irf3</i>	SPZ (n=11)					
wt	SPZ (n=17)	0,8989 ns	0,0655 ns	0,2328 ns	0,4089 ns	0,0567 ns
wt / <i>Irf3</i> BM	SPZ (n=7)					
wt	SPZ (n=17)	0,0002 ***	0,001 ***	0,0002 ***	0,0005 ***	< 0,0001 ***
<i>Irf3</i> / wt BM	SPZ (n=7)					

Fig. 2c		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	SPZ (n=16)	0,6163 ns	0,9733 ns	0,5701 ns	0,3003 ns	0,1923 ns
<i>MyD88</i>	SPZ (n=7)					
wt	SPZ (n=16)	0,4813 ns	0,0402 *	0,2839 ns	0,2572 ns	0,3425 ns
<i>Trif</i>	SPZ (n=8)					
wt	SPZ (n=16)	0,9554 ns	0,9554 ns	0,2404 ns	0,9554 ns	0,0651 ns
<i>MyD88/Trif</i>	SPZ (n=3)					

Fig. 2d		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	SPZ (n=8)	0,2844 ns	0,4 ns	0,3543 ns	0,3929 ns	1 ns
<i>Tlr3</i>	SPZ (n=9)					
wt	SPZ (n=8)	0,4807 ns	1 ns	0,0464 *	0,2286 ns	0,7213 ns
<i>Tlr4</i>	SPZ (n=9)					

Fig. 2e		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	SPZ (n=12)	< 0,0001 ***	< 0,0001 ***	0,0004 ***	0,0002 ***	< 0,0001 ***
<i>Mavs</i>	SPZ (n=11)					

Fig. 2f		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	SPZ (n=7)	0,0530 ns	0,0513 ns	0,1649 ns	0,3176 ns	0,0379 *
<i>Rig-I</i>	SPZ (n=7)					

Fig. 2g		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	SPZ (n=12)	0,0059 **	0,0004 ***	0,0001 ***	0,0066 **	< 0,0001 ***
<i>Mda5</i>	SPZ (n=14)					

Fig. 2h		<i>Iffit1</i>	<i>Iffi44</i>	<i>Usp18</i>	<i>Iffit3</i>	<i>Irf7</i>
wt	<i>P. berghei</i> RNA (n=13)	0,0077 **	0,0007 ***	0,0010 **	0,0035 **	0,0025 **
<i>Mda5</i>	<i>P. berghei</i> RNA (n=13)					

Supplementary Fig.2b (n=independent RNA samples)		
<i>P.falciparum</i> RNA (n=7)	wt	0,0006 ***
	<i>Mda5</i>	
<i>P.berghei</i> RNA (n=10)	wt	0,0002 ***
	<i>Mda5</i>	
<i>P.yoelii</i> RNA (n=5)	wt	0,0079 **
	<i>Mda5</i>	

Supplementary Fig.2c (n=independent RNA samples)		
<i>P.falciparum</i> RNA (n=6)	wt	0,0022 **
	<i>Mda5</i>	
<i>P.berghei</i> RNA (n=13)	wt	0,0066 **
	<i>Mda5</i>	
<i>P.yoelii</i> RNA (n=8)	wt	0,0404 *
	<i>Mda5</i>	

Supplementary Fig.2d (n=independent RNA samples)		
<i>P.falciparum</i> RNA (n=6)	wt	0,0002 ***
	<i>Mda5</i>	
<i>P.berghei</i> RNA (n=13)	wt	0,0005 ***
	<i>Mda5</i>	
<i>P.yoelii</i> RNA (n=8)	wt	0,0830 ns
	<i>Mda5</i>	

Fig. 3a		
42h	wt (n=23)	0,306 ns
	<i>Iffnar1</i> (n=24)	
48h	wt (n=19)	< 0,0001 ***
	<i>Iffnar1</i> (n=20)	

Fig. 3b		
mosquito bite	wt (n=12)	0,0269 *
	<i>Iffnar1</i> (n=14)	

Fig. 3d		
Parasite number	wt (n=9)	< 0,0148 *
	<i>Iffnar1</i> (n=9)	
Parasite area	wt (n=60) (n=images of EEFs analysed)	0,6941 ns
	<i>Iffnar1</i> (n=59) (n=images of EEFs analysed)	

Fig. 3e		
day4	wt (n=9)	0,0044 **
	<i>Iffnar1</i> (n=9)	
day5	wt (n=9)	0,0004 ***
	<i>Iffnar1</i> (n=9)	
day6	wt (n=9)	0,0004 ***
	<i>Iffnar1</i> (n=9)	

Fig. 3f		
42h	<i>Iffnar1</i> fl/fl (n=6)	0,7998 ns
	Cre-Alb <i>Iffnar1</i> fl/fl (n=8)	
48h	<i>Iffnar1</i> fl/fl (n=14)	0,0019 **
	Cre-Alb <i>Iffnar1</i> fl/fl (n=14)	

Fig. 3g		
day4	<i>Ifnar1</i> fl/fl (n=6)	0.0089 **
	Cre-Alb <i>Ifnar1</i> fl/fl (n=6)	
day5	<i>Ifnar1</i> fl/fl (n=6)	0.0080 **
	Cre-Alb <i>Ifnar1</i> fl/fl (n=6)	
day6	<i>Ifnar1</i> fl/fl (n=6)	0.0146 *
	Cre-Alb <i>Ifnar1</i> fl/fl (n=6)	

Fig. 3h		
wt	Ctrl (n=11)	0.0025 **
	HCV RNA (n=11)	
<i>Ifnar1</i>	Ctrl (n=5)	0.6905 ns
	HCV RNA (n=5)	

Supplementary Fig. 3a		
42h	wt (n=21)	0.7209 ns
	<i>lrf3</i> (n=11)	
48h	wt (n=24)	< 0,0001 ***
	<i>lrf3</i> (n=20)	

Supplementary Fig. 3b		
mosquito bite	wt (n=10)	0.0005 ***
	<i>lrf3</i> (n=14)	

Fig. 4a		
wt	Ctrl (n=21)	< 0,0001 ***
	DMXAA (n=12)	
<i>Ifnar1</i>	Ctrl (n=13)	0,637 ns
	DMXAA (n=8)	

Fig. 4d (n=infected cells associated with infiltrates of 700 counted EEFs)		
44h	wt (n=12)	< 0.05*
	<i>Ifnar1</i> (n=3)	
48h	wt (n=22)	< 0.001***
	<i>Ifnar1</i> (n=4)	
52h	wt (n=44)	< 0.001***
	<i>Ifnar1</i> (n=5)	

Fig. 4e		<i>Ifit1</i>	<i>Ifi44</i>	<i>Usp18</i>	<i>Ifit3</i>	<i>Irf7</i>
Hepatocytes	NI (n=9)	0.0002 ***	0.0010 ***	0.0002 ***	0.0006 ***	0.0006 ***
	42h (n=8)					
Hepatocytes	NI (n=9)	0.0048 **	0.0016 **	0.0028 **	0.0016 **	0.0016 **
	48h (n=6)					
Liver leukocytes	NI (n=14)	0.3195 ns	0.4816 ns	0.2469 ns	0.1453 ns	0.3956 ns
	42h (n=13)					
Liver leukocytes	NI (n=14)	0.0026 **	0.0006 ***	0.0034 **	0.0073 **	0.0105 *
	48h (n=6)					

Fig. 4f (n=infected cells associated with infiltrates of 500 counted EEFs)		
48h	<i>Ifnar1</i> fl/fl (n=16)	< 0.05*
	Cre-Alb <i>Ifnar1</i> fl/fl (n=6)	
52h	<i>Ifnar1</i> fl/fl (n=60)	< 0.001***
	Cre-Alb <i>Ifnar1</i> fl/fl (n=35)	

Fig. 4g		
42h	<i>Ifnar1</i> fl/fl (n=16)	0.7033 ns
	Cre-LysM <i>Ifnar1</i> fl/fl (n=6)	
48h	<i>Ifnar1</i> fl/fl (n=58)	0.0118 *
	Cre-LysM <i>Ifnar1</i> fl/fl (n=26)	

Supplementary Fig. 4a		<i>Ifit1</i>	<i>Ifi44</i>	<i>Usp18</i>	<i>Ifit3</i>	<i>Irf7</i>
wt	Ctrl (n=5)	0.0079 **	0.0079 **	0.0079 **	0.0079 **	0.0079 **
	DMXAA (n=5)					

Supplementary Fig. 4c		<i>ApoA1</i>	<i>Ncf2</i>	<i>Cd68</i>
wt	liver (n=10)	0,52 ns	0,13 ns	0,0007 ***
	hepatocytes (n=7)			
wt	liver (n=10)	0,0002 ***	< 0,0001 ***	0,0004 ***
	leukocytes (n=10)			



**Supplementary Table 3.** List of Oligonucleotide primers used in quantitative PCR experiments

Gene name	Gene accession number	Forward Primer	Reverse Primer
<b><i>Mus musculus</i></b>			
<i>Hprt</i>	15452	CATTATGCCGAGGATTTGGA	AATCCAGCAGGTCAGCAAAG
<i>Ifit1</i>	15957	CCTTTACAGCAACCATGGGAGA	GCAGCTTCCATGTGAAGTGAC
<i>Ifi44</i>	99899	TCGATTCCATGAAACCAATCAC	CAAATGCAGAATGCCATGTTTT
<i>Usp18</i>	24110	CGTGCTTGAGAGGGTCATTTG	GGTCGGGAGTCCACAACCTTC
<i>Ifit3</i>	15959	CTGAACTGCTCAGCCCACAC	TGGACATACTTCCTCCCTGA
<i>Irf7</i>	54123	CTTCAGCACTTTCTCCGAGA	TGTAGTGTGGTGACCCTTGC
<i>Infb</i>	15977	CCCTATGGAGATGACGGAGA	CTGTCTGCTGGTGGAGTTCA
<i>Ncf2</i>	17970	GCAGTGGCCTACTTCCAGAG	CTTCATGTTGGTTGCCAATG
<i>Cd68</i>	12514	AGCTGCCTGACAAGGGACACT	AGGAGGACCAGGCCAATGAT
<i>ApoA1</i>	11806	CCAGAGTGTCCCAGTTTTCC	TATGTGGATGCGGTCAAAGA
<b><i>Plasmodium</i></b>			
18S <i>P. berghei</i>		AAGCATTAAATAAAGCGAATACATCCTTAC	GGAGATTGGTTTTGACGTTTATGTG