Figure E1. Gating strategy to identify human peripheral blood MAIT cells. Human peripheral blood MAIT cells were identified by APC-conjugated human MR1 5-OP-RU tetramer. MR1 6-FP tetramer was used as negative controls.

Figure E2. Generation of *Mr1*$^{-/-}$ mice.

A. Targeting strategy for generation of constitutive knockout *Mr1*$^{-/-}$ mice via CRISPR/Cas9-mediated gene editing. The targeting strategy is based on NCBI transcript NM_008209.4. Exon 1 contains the translation initiation codon. The Cas9 protein along with the proximal and distal guide RNAs (gRNAs) has been injected into C57BL/6NTac zygotes. The constitutive Knock-Out allele is obtained after CRISPR/Cas9-mediated gene editing. Deletion of exons 1 to 4 and approx. 1.5 kb of sequence upstream of exon 1 (promoter region) results in the loss of function of the *Mr1* gene by preventing transcription of the Mr1 mRNA and by deleting most of the gene. **B**. Locations and sequences of the proximal and distal gRNAs. **C**. qPCR results indicating absence of *Mr1* expression is absent in all the tissues that we have examined, including lung, liver and thymus, of *Mr1*$^{-/-}$ mice. **D**. Flow cytometry profiles indicating that MAIT cells are absent in the thymus and liver of *Mr1*$^{-/-}$ mice.

Figure E3. MAIT cells restrain allergic airway inflammation.

A. Mouse lung ILC2 were identified as CD45^{+}Lin^{-}Thy1^{+}T1/ST2^{+} cells. **B**. Mean fluorescence intensity (MFI) for Ki67 in lung ILC2 of *Mr1*$^{-/-}$ or control wildtype mice challenged with *Alternaria* extracts or PBS every other day for 3 days. **C**. Concentrations of IL-5 and IL-13 in the lung homogenate of *Mr1*$^{-/-}$ or control wildtype mice challenged with *Alternaria* extracts or PBS every other day for 3 days. **D**. Number of total ILC2, IL-5^{+} ILC2, and IL-13^{+} ILC2 in the lungs of *Mr1*$^{-/-}$ or control wildtype mice challenged with house dust mite (HDM) extracts or PBS daily for 5 days. **E**. The number of eosinophils in the bronchoalveolar lavage fluid of *Mr1*$^{-/-}$ or control wildtype mice challenged with house dust mite (HDM) extracts or PBS daily for 5 days. **F**. Total number of ILC2 in the lungs of *Rag1*$^{-/-}$ mice treated with PBS or Alternaria extracts, with or without MAIT cell transfer. **G**. Representative flow cytometry profile of MAIT cells in the lungs of *Mr1*$^{-/-}$ mice that received intravenous transfer of MAIT cells or PBS. **H.** 5000 sorted mouse lung ILC2 were cultured with IL-7, IL-2, and IL-33 5 days, in the presence or absence of IL4I1. Cell growth was calculated as fold change of cell number over 5 days of culture. **I**. Ki67 expression was examined by intracellular staining. MFI of Ki67 in cultured cells was shown. **J**. IL-13 expression was examined by intracellular staining. Data are from 4-6 mice per group, representative of two independent experiments.

Figure E1

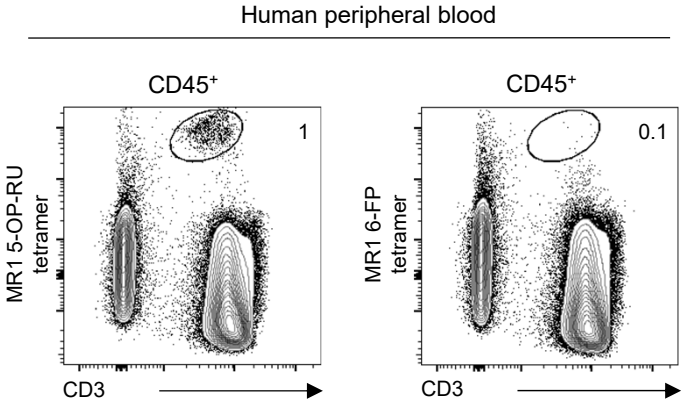
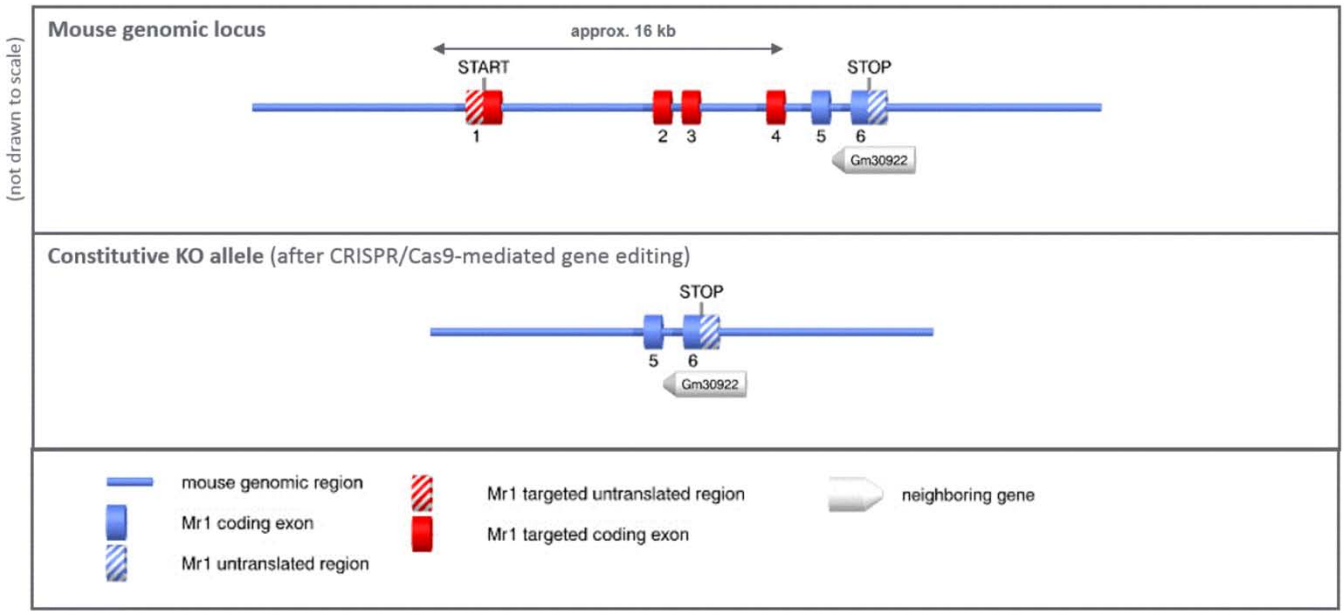
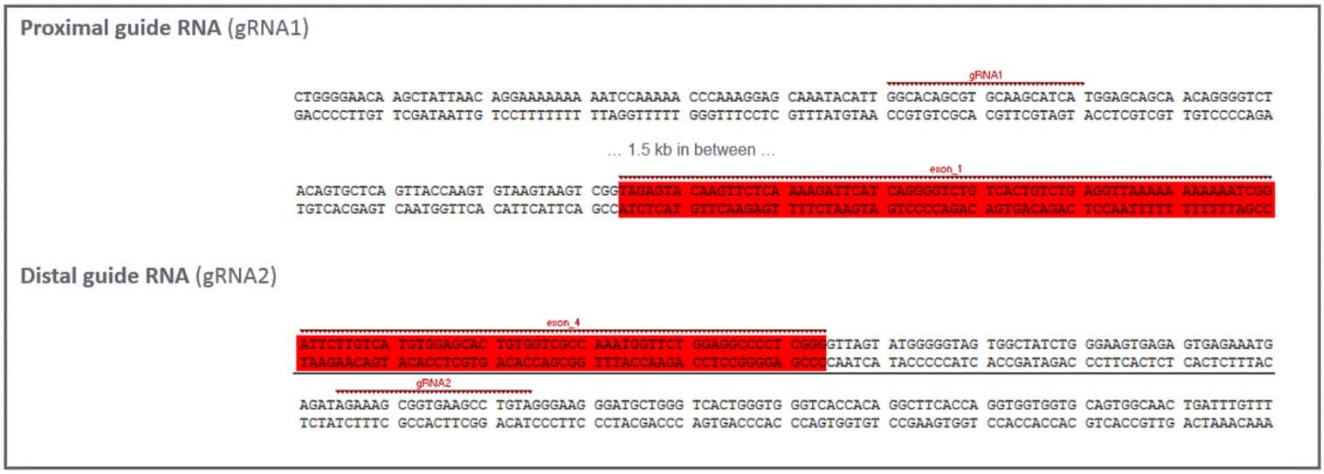

Human peripheral blood
CD45+
CD45+
1
0.1
MR1 5-OP-RU tetramer
MR1 6-FP tetramer
CD3
CD3

Figure E2

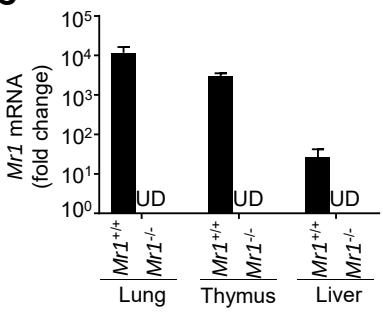
A



B



C



D

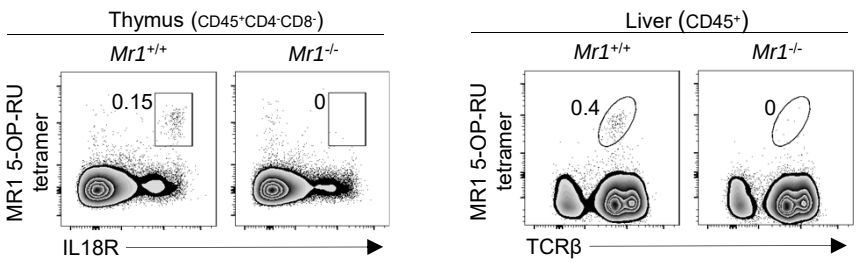
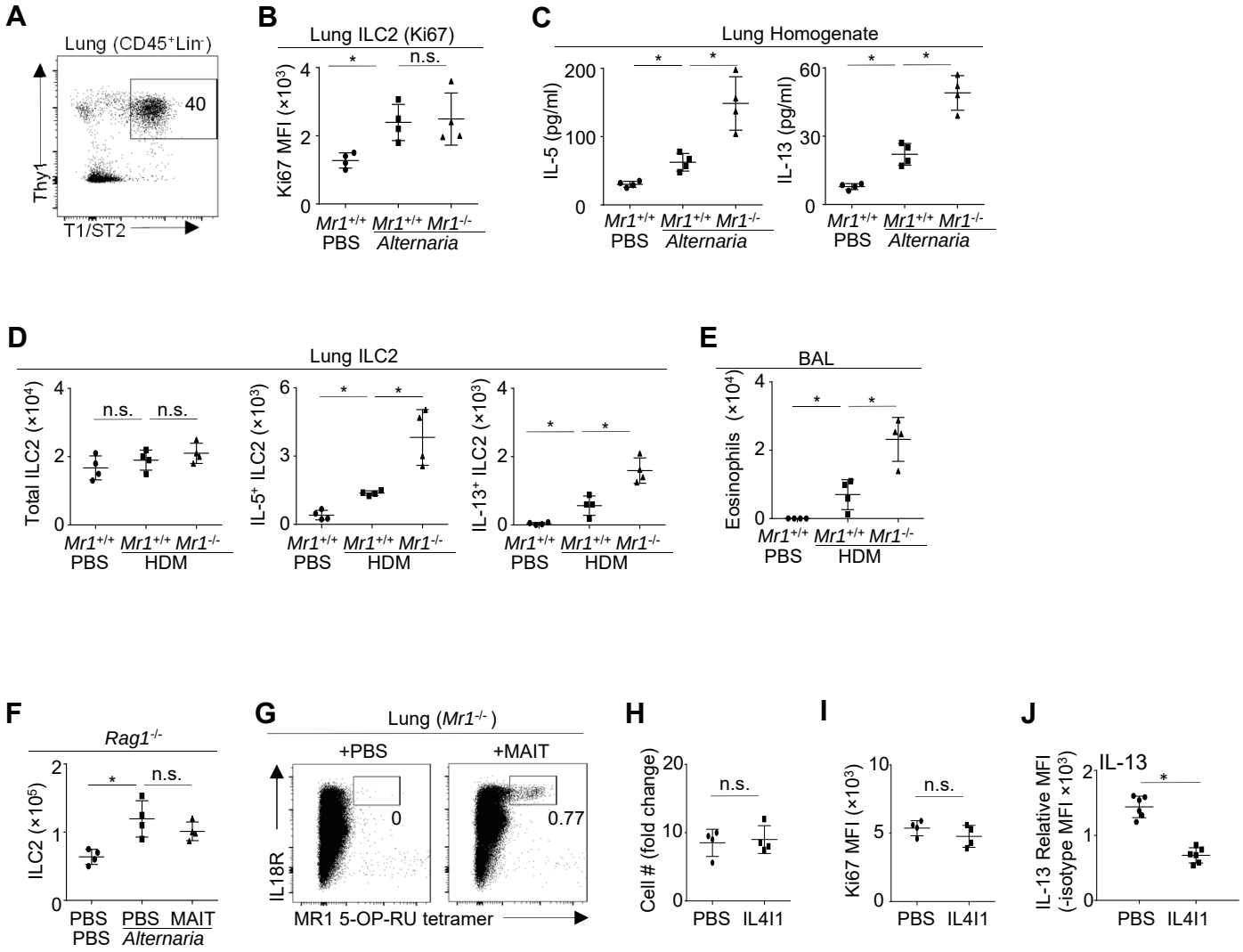


Figure E3


A
Lung (CD45+Lin-)
40
Thy1
T1/ST2
B
Lung ILC2 (Ki67)
Ki67 MFI (×10³)
n.s.
Mr1+/+ PBS
Mr1+/+ Mr1-/-
Alternaria
C
Lung Homogenate
IL-5 (pg/ml)
IL-13 (pg/ml)
D
Lung ILC2
Total ILC2 (×10⁴)
IL-5+ ILC2 (×10³)
IL-13+ ILC2 (×10³)
HDM
E
BAL
Eosinophils (×10⁴)
F
Rag1-/-
ILC2 (×10⁵)
PBS PBS
PBS MAIT
G
Lung (Mr1-/-)
+PBS
+MAIT
IL18R
MR1 5-OP-RU tetramer
0
0.77
H
Cell # (fold change)
PBS IL4I1
I
Ki67 MFI (×10³)
J
IL-13
IL-13 Relative MFI (-isotype MFI ×10³)