Supplemental Figure 1.

A)

B)

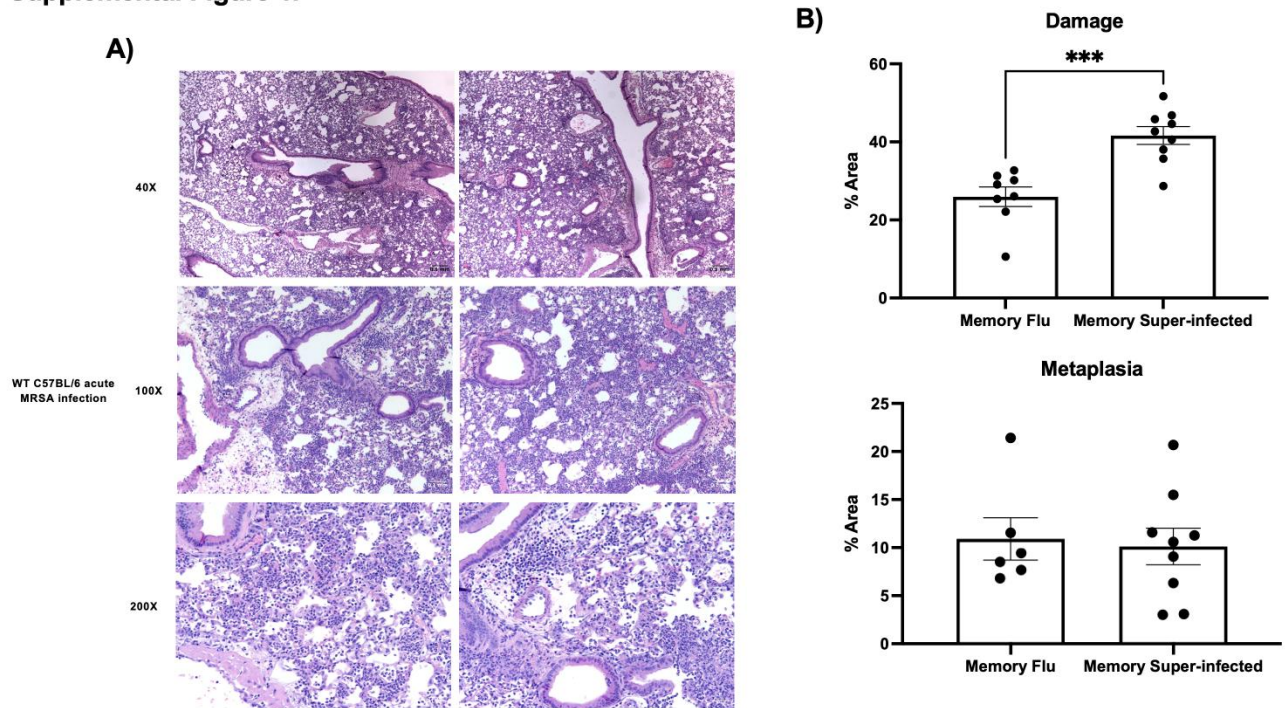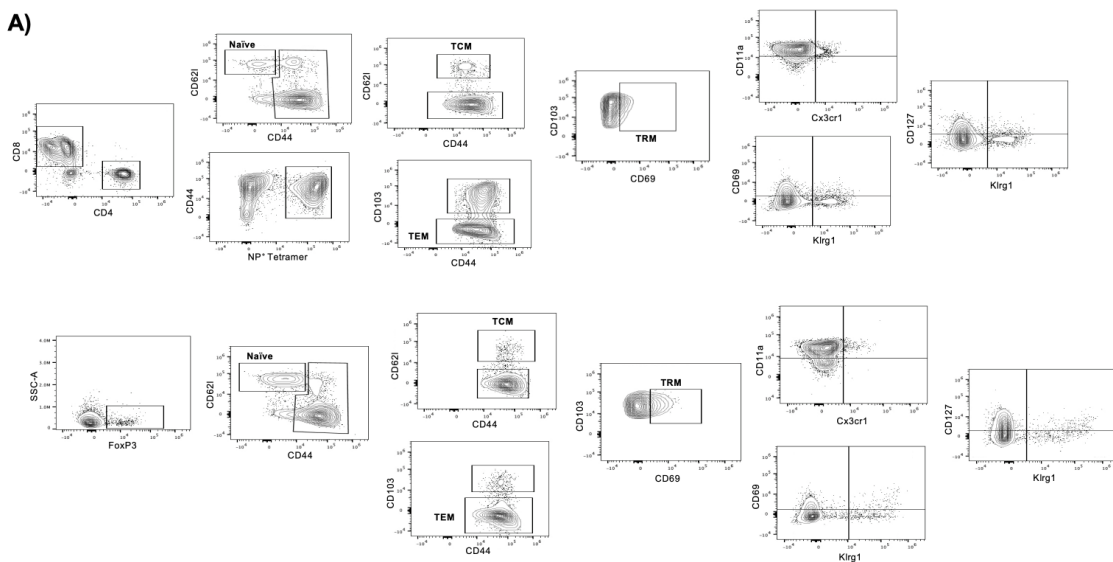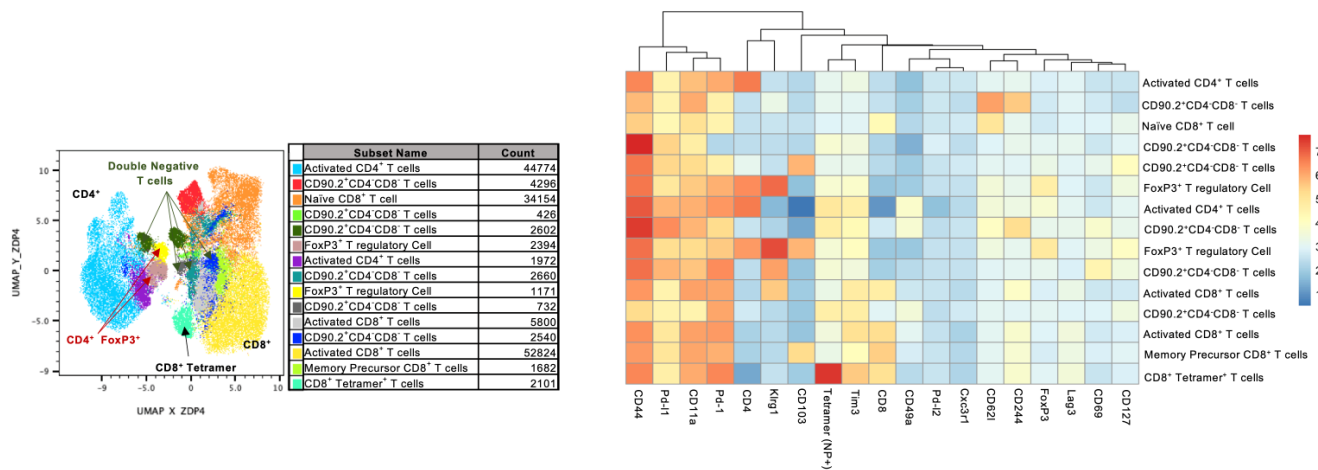**Supplementary Figure 1 Visualization of lung damage MRSA alone infected mice and quantification of damage and metaplasia in memory experienced mice.** A) Representative histology sections of acute (n=2) and memory (n=2) influenza infected WT C57Bl/6 mice from formalin inflated mouse lungs stained with H&E at 40X,100X, and 200X. B) Percent of damage and metaplasia in influenza alone and super-infected memory groups quantified by calculating thresholds of damaged areas and areas of metaplasia using Fiji software (influenza n=8, super-infected n=9). p values: *<0.05, **<0.01 ***<0.001, ****<0.0001.

A)

B)

Subset Name	Count
Activated CD4⁺ T cells	44774
CD90.2⁺CD4⁻CD8⁻ T cells	4296
Naïve CD8⁺ T cell	34154
CD90.2⁺CD4⁻CD8⁻ T cells	426
CD90.2⁺CD4⁻CD8⁻ T cells	2602
FoxP3⁺ T regulatory Cell	2394
Activated CD4⁺ T cells	1972
CD90.2⁺CD4⁻CD8⁻ T cells	2660
FoxP3⁺ T regulatory Cell	1171
CD90.2⁺CD4⁻CD8⁻ T cells	732
Activated CD8⁺ T cells	5800
CD90.2⁺CD4⁻CD8⁻ T cells	2540
Activated CD8⁺ T cells	52824
Memory Precursor CD8⁺ T cells	1682
CD8⁺ Tetramer⁺ T cells	2101

C)

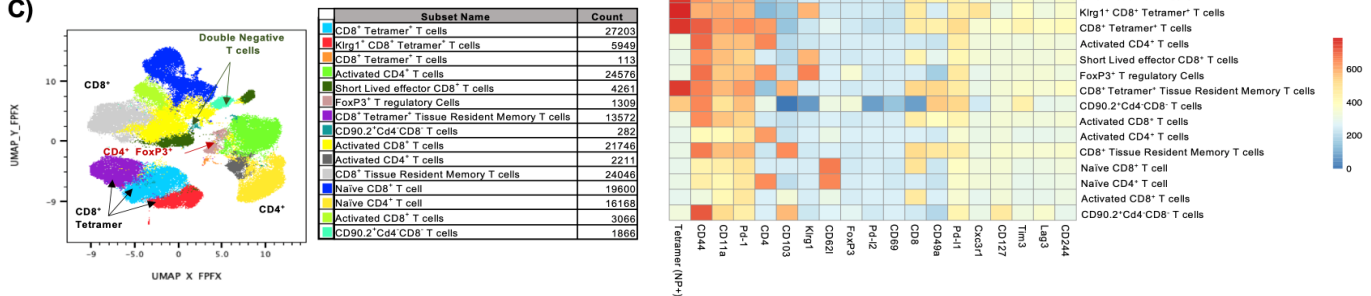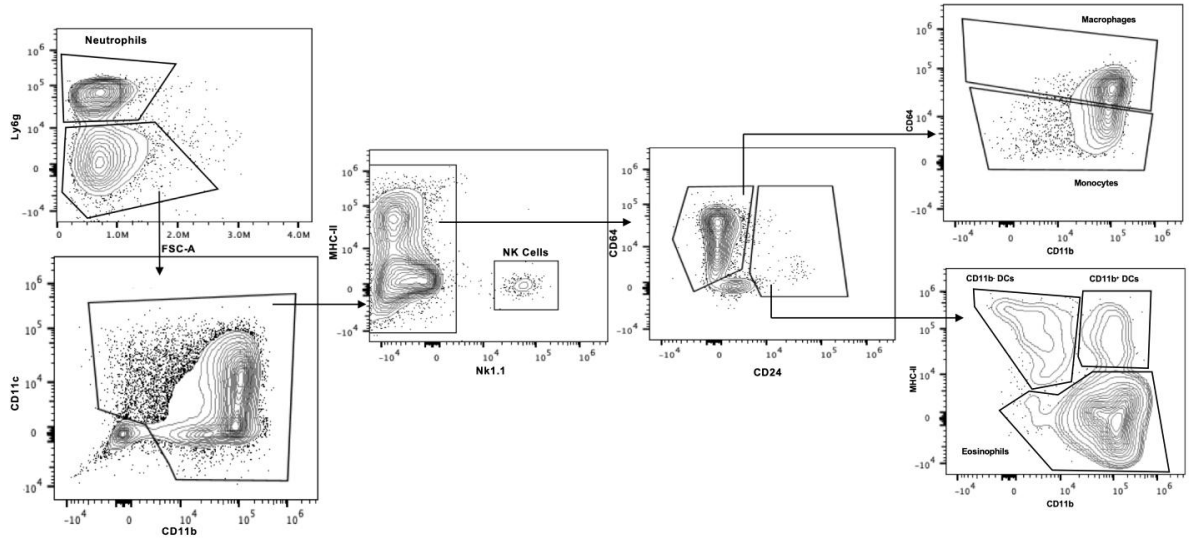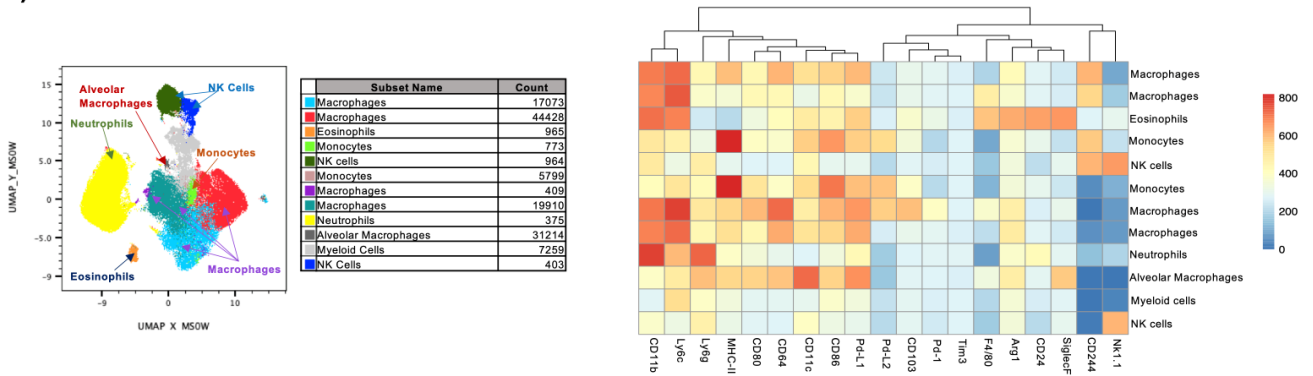| Subset Name	Count
CD8⁺ Tetramer⁺ T cells	27203
Klrg1⁺ CD8⁺ Tetramer⁺ T cells	5949
CD8⁺ Tetramer⁺ T cells	113
Activated CD4⁺ T cells	24576
Short Lived effector CD8⁺ T cells	4261
FoxP3⁺ T regulatory Cells	1309
CD8⁺ Tetramer⁺ Tissue Resident Memory T cells	13572
CD90.2⁺Cd4⁻CD8⁻ T cells	282
Activated CD4⁺ T cells	21746
CD8⁺ Tissue Resident Memory T cells	24046
Naïve CD8⁺ T cell	19600
Naïve CD4⁺ T cell	16168
Activated CD8⁺ T cells	3066
CD90.2⁺Cd4⁻CD8⁻ T cells	1866

Supplementary Figure 2. Gating strategy for T cell compartment analysis and flow cytometry analysis for acute and memory influenza alone infections. A) T cells were initially gated on CD90.2⁺CD45⁺Live cells and further gated to parse out changes in CD4⁺ and CD8⁺ T cells. B) Flow cytometry analysis on acute influenza infected mouse lungs. Once gated samples were concatenated (n=3) and populations were visualized using FlowSOM and UMAP plugins in FlowJo. FlowSOM populations were further analyzed by conventional gating techniques to determine breakdown of T cell types. C) Flow cytometry analysis on memory influenza alone infected mice (n=4).
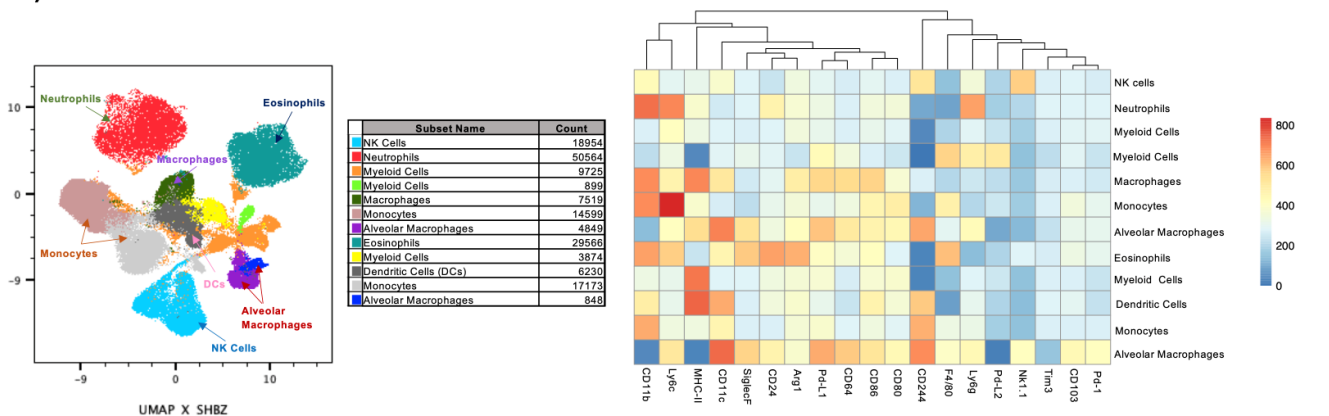
Supplemental Figure 3.

A)

B)

Subset Name	Count
Macrophages	17073
Macrophages	44428
Eosinophils	965
Monocytes	773
NK cells	964
Monocytes	5799
Macrophages	409
Macrophages	19910
Neutrophils	375
Alveolar Macrophages	31214
Myeloid Cells	7259
NK Cells	403

C)

Subset Name	Count
NK Cells	18954
Neutrophils	50564
Myeloid Cells	9725
Myeloid Cells	899
Macrophages	7519
Monocytes	14599
Alveolar Macrophages	4849
Eosinophils	29566
Myeloid Cells	3874
Dendritic Cells (DCs)	6230
Monocytes	17173
Alveolar Macrophages	848

Supplementary Figure 3. Gating strategy for myeloid cell subset analysis and flow cytometry analysis for acute and memory influenza alone infections.. Myeloid cells were initially gated on TCRB⁻B220⁻CD45⁺Live cells and further gated to determine changes in myeloid cell subsets. B) Flow cytometry analysis on acute influenza infected mouse lungs. Once gated samples were concatenated (n=3) and downsampled then visualized using FlowSOM and UMAP plugins in FlowJo. FlowSOM populations were further analyzed by conventional gating techniques to determine breakdown of myeloid cell types. C) Flow cytometry analysis on memory influenza alone infected mice (n=4).