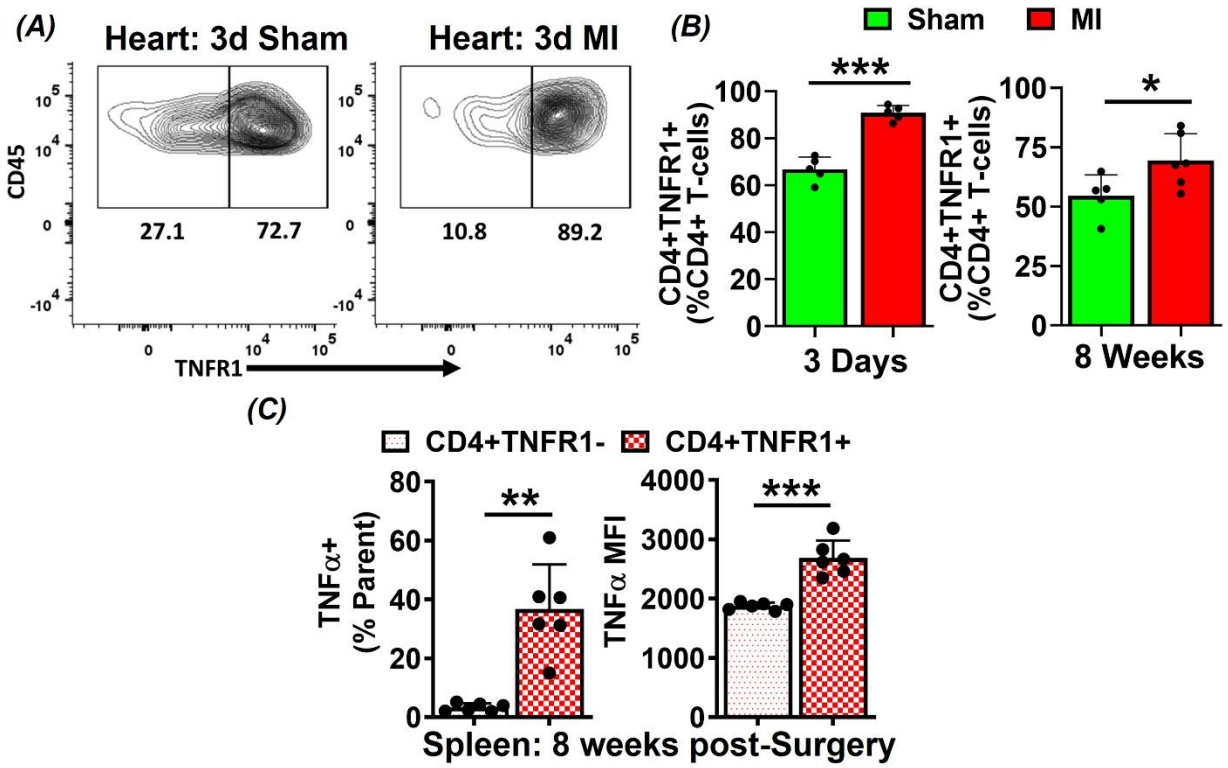
**Supplemental Appendix**

**Supplemental Table 1.** List of antibodies used for flow cytometry

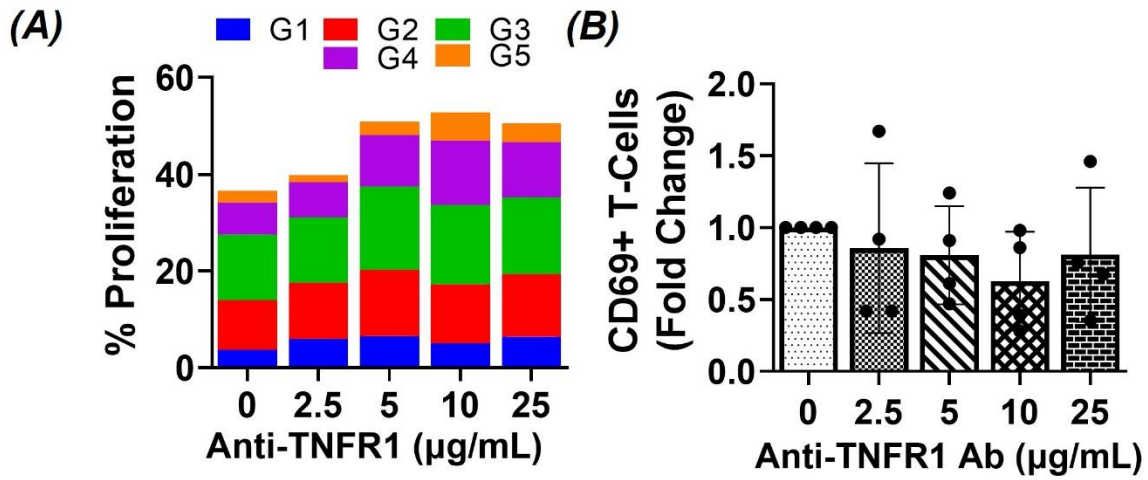
| ***Antibody*** | ***Clone*** | ***Source*** | ***Catalog#*** |
|---|---|---|---|
| Bcl-xL-PE | 7B2.5 | Abcam | ab26035 |
| CD45.1-FITC | A20 | BioLegend | 110706 |
| CD45.2-PE | 104 | BioLegend | 109808 |
| CD4-PECY7 | RM4-5 | BioLegend | 100528 |
| Foxp3-APC | FJK-16s | Invitrogen | 17-5773-82 |
| TNFα-PE | MP6-XT22 | Invitrogen | 12-7321-82 |
| Ki67-APC-eF780 | SolA15 | Invitrogen | 47-5698-82 |
| CD69-PerCP-Cy5.5 | H1.2F3 | Tonbo | 65-0691-U100 |

**Supplemental Figures**



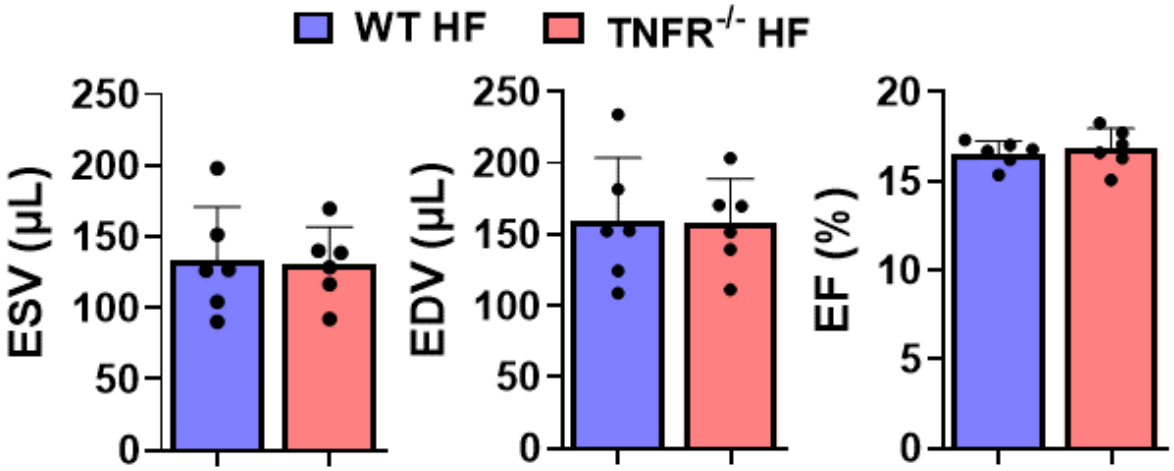

**Supplemental Figure 1**

**Supplemental Figure 1.** ***(A)*** Representative flow contour plots showing cardiac $TNFR1^{+}CD4^{+}$ helper T-cells at 3 days post-MI or sham surgery, and ***(B)*** group quantitation for their frequency at 3 days *(left)* and 8 weeks *(right)* post-MI or sham surgery. ***(C)*** Group quantitation for frequency of $TNF\alpha^{+}$ cells and its MFI in $CD4^{+}TNFR1^{-}$ and $CD4^{+}TNFR1^{+}$ T cells in the spleens of HF mice. Data in ***(B)*** and ***(C)*** were analyzed using unpaired Student's t-test. *p<0.05, **p<0.01 and **p<0.001 represent significance with respect to indicated groups.

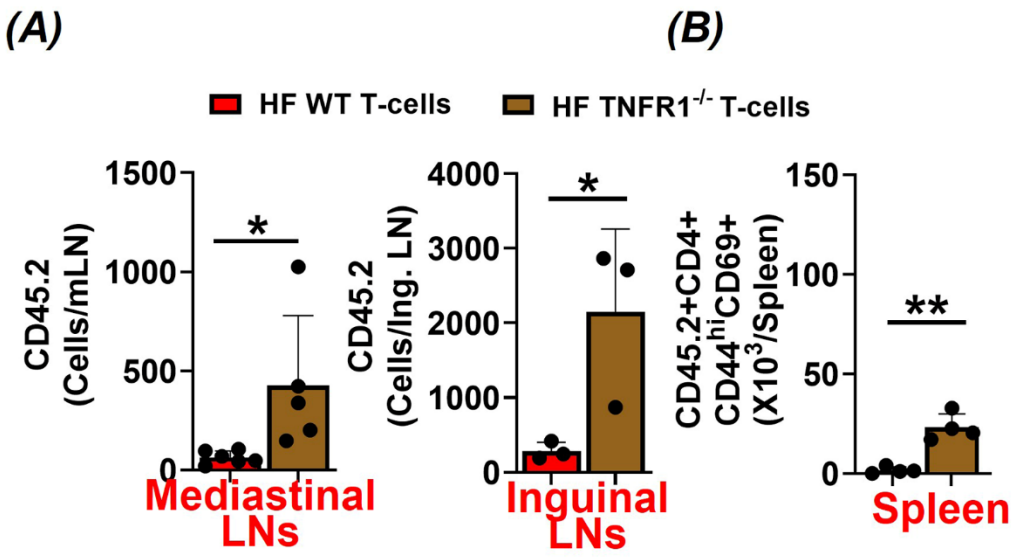



## Supplemental Figure 2

**Supplemental Figure 2.** ***(A)*** Quantitative data for different generations (G1-G5) that proliferated 1-5 times in the absence and presence of different concentration of anti-TNFR1 antibody. Data is shown from a representative experiment. ***(B)*** Fold change in the frequency (%) of $CD69^{+}CD4^{+}$ T-cells in proliferated T-cells treated with different concentrations of neutralizing anti-TNFR1 antibody. All experiments were repeated 4 times with 3-4 replicates in each experiment and fold change *(right)* calculated with respect to non-treated stimulated controls for each individual experiment is shown. Data in ***(B)*** were analyzed using one-way ANOVA and p-values were adjusted using FDR.

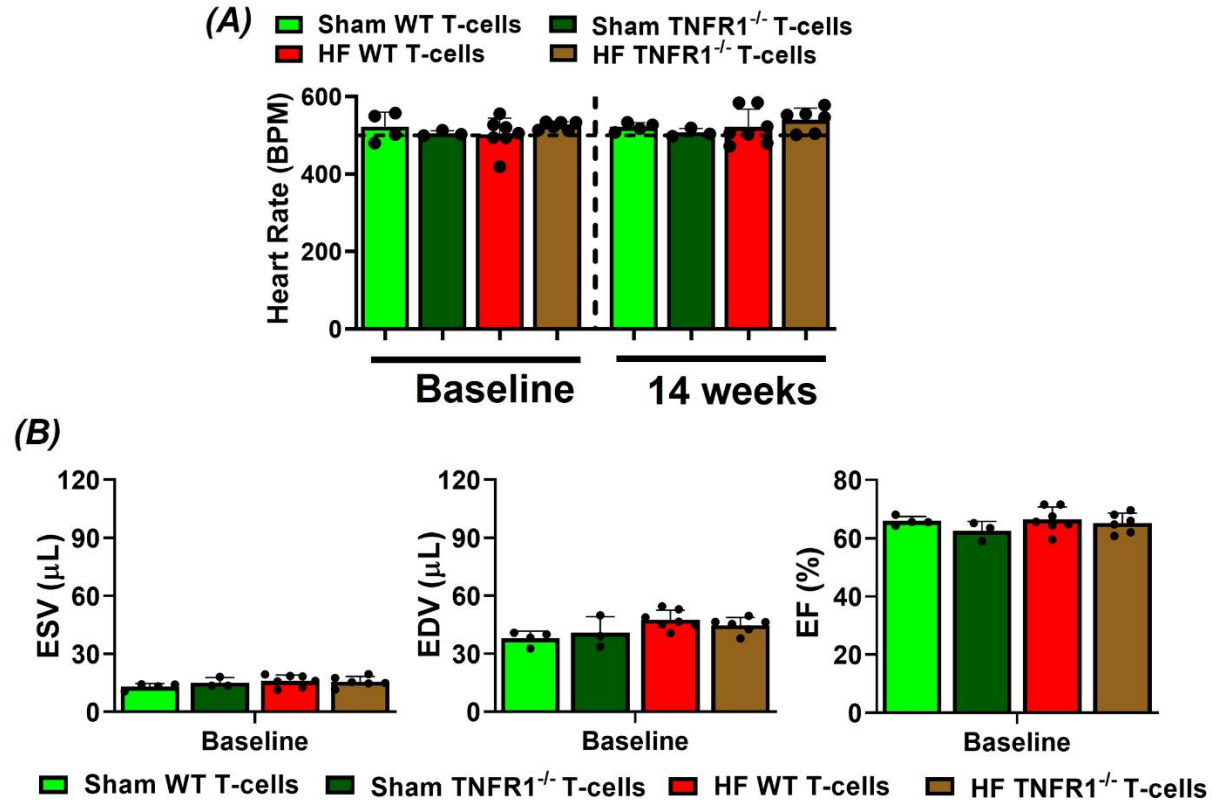



**Supplemental Figure 3.** Group quantitation for end-systolic and end-diastolic volumes (ESV and EDV), and ejection fraction (EF) of heart failure WT and TNFR1$^{-/-}$ donor mice at the time of cell isolation. Data were analyzed using unpaired Student's t-test.



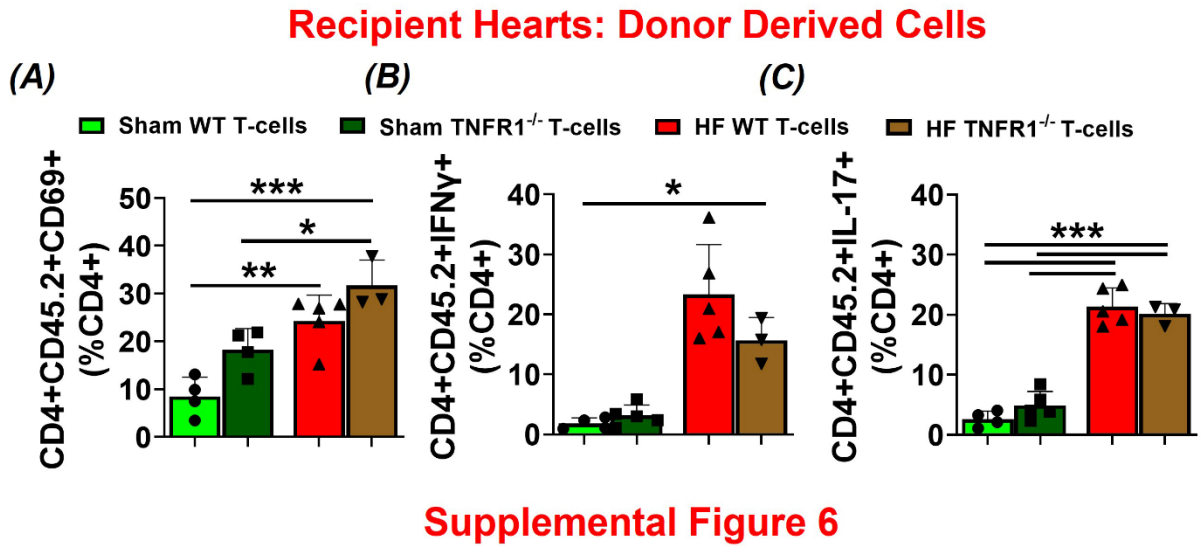

**Supplemental Figure 4**

**Supplemental Figure 4.** ***(A)*** Adoptively transferred HF-activated WT or TNFR1$^{-/-}$ donor CD45.2$^{+}$CD4$^{+}$ T-cells in the mediastinal *(left)* and inguinal lymph nodes *(right)* of CD45.1 recipient mice at 14 weeks post-transfer. ***(B)*** CD44$^{hi}$CD69$^{+}$ activated T-cells among adoptively transferred CD45.2$^{+}$CD4$^{+}$ T-cells derived from HF WT or TNFR1$^{-/-}$ mice in the spleens of CD45.1 recipient mice at 14 weeks post-transfer. Data in ***(A),*** and ***(B)*** were analyzed using unpaired Student's t-test. *p<0.05, and **p<0.01 represent significance with respect to indicated groups.

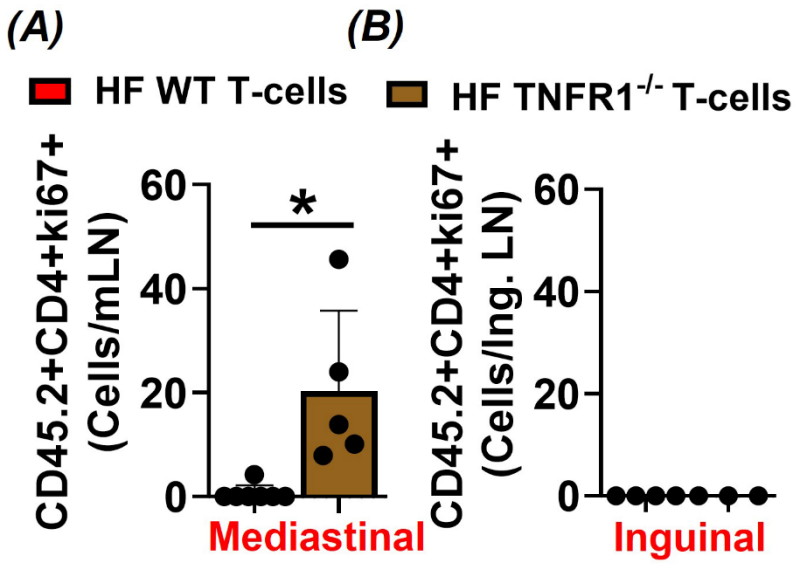



**Supplemental Figure 5**

**Supplemental Figure 5.** ***(A)*** Heart rate of recipient CD45.1 mice at baseline (before injection) and at 14 weeks post-adoptive transfer of $CD45.2^+$ T-cells isolated either from the WT or $TNFR1^{-/-}$ sham or HF mice. ***(B)*** Group quantitation for end-systolic and end-diastolic volumes (ESV and EDV), and ejection fraction (EF) of $CD45.1^+$ recipient mice before the adoptive-transfer (at baseline) of HF-activated $CD45.2^+CD4^+$ T-cells isolated either from WT or $TNFR1^{-/-}$ mice. Data were analyzed using two-way ANOVA and p-values were adjusted using FDR.




**Supplemental Figure 6.** Group quantitation for frequency (%) of ***(A)*** $CD45.2^{+}CD4^{+}$ $CD69^{+}$, ***(B)*** $CD45.2^{+}CD4^{+}$ $IFN\gamma^{+}$ Th1 and ***(C)*** $CD45.2^{+}CD4^{+}$ $IL\text{-}17^{+}$ Th17 T-cells among total donor-derived $CD45.2^{+}CD4^{+}$ T-cells in the hearts of CD45.1 recipient mice injected either with sham or HF T-cells isolated either from WT or $TNFR1^{-/-}$ mice. Study was repeated 2-times (n=2-5 in each study) and data from one experiment are shown. Data were analyzed using two-way ANOVA and p-values were adjusted using FDR. *p<0.05, **p<0.01 and **p<0.001 represent significance with respect to indicated groups.




## Supplemental Figure 7

**Supplemental Figure 7.** ***(A)*** cell counts of donor-derived $CD45.2^{+}CD4^{+}$ $Ki67^{+}$ T-cells in the mediastinal and ***(B)*** inguinal lymph-nodes of recipient CD45.1 mice injected with HF T-cells isolated either from WT or $TNFR1^{-/-}$ mice. Study was repeated 2-times (n=2-5 in each study) and data from one experiment are shown. Data were analyzed using unpaired Student's t-test. *p<0.05, represent significance with respect to the indicated group.