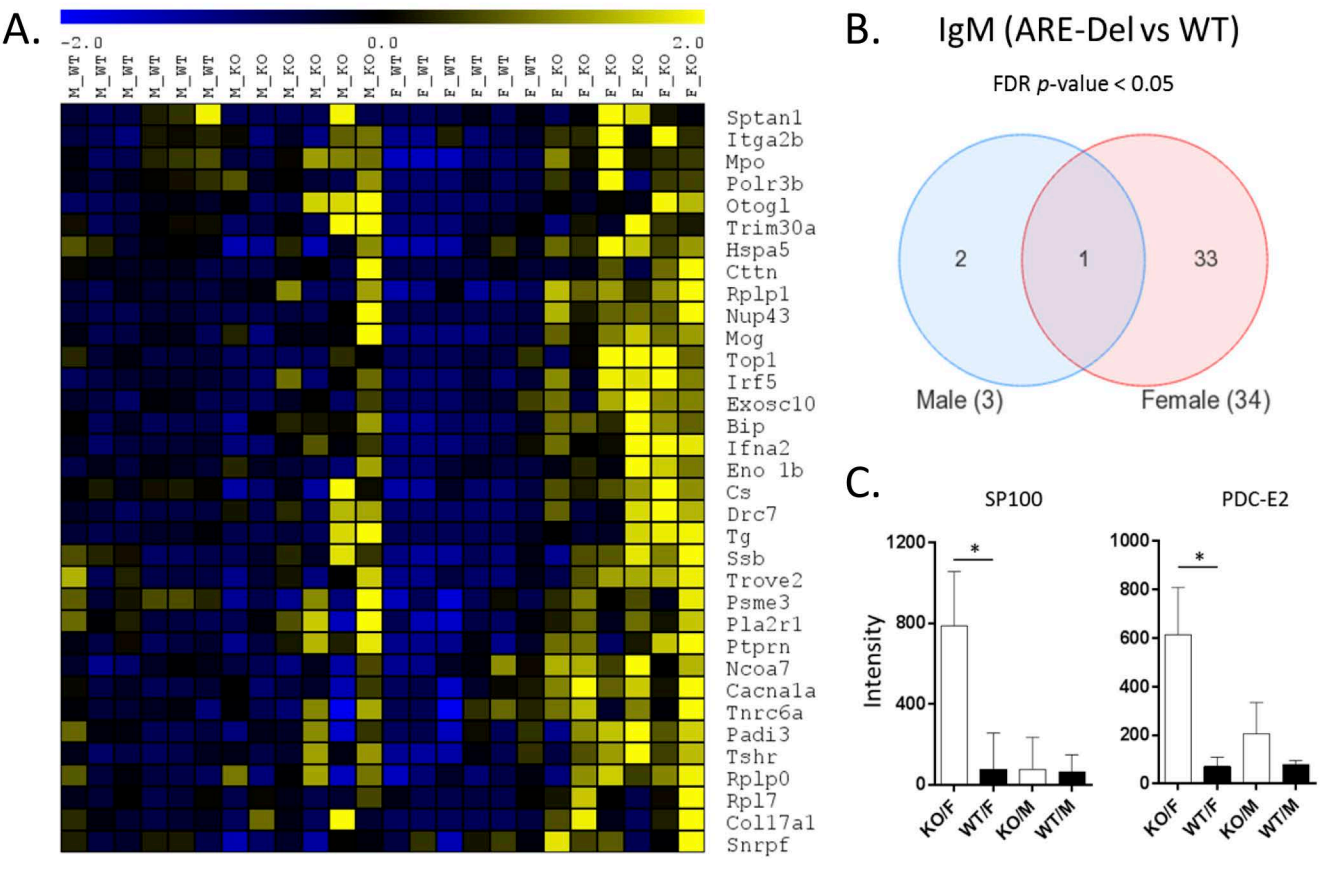
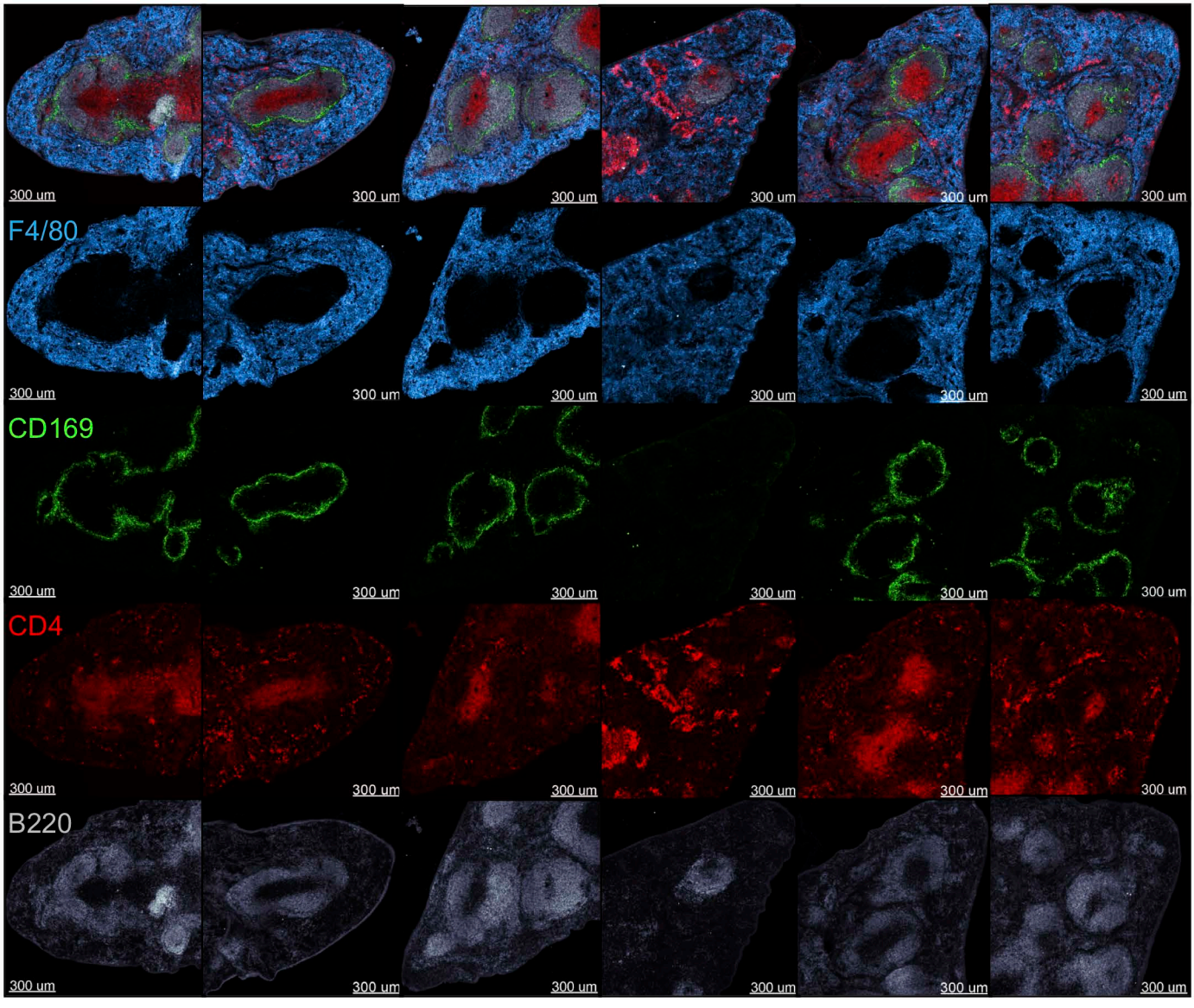
Supplemental Figure 1. Female ARE-Del$^{-/-}$ mice have a high induction of IgM autoantibodies for autoimmune diseases. Venn diagram of differentially expressed genes in male and female ARE-Del$^{-/-}$ mice vs control mice (n=5) (A). Hierarchical clustering of differentially expressed autoantibodies (B). Expression of SP100 and PDC-E2 IgM autoantibodies in male (M) vs female (F) ARE-Del$^{-/-}$ mice (KO) compared to control littermates (C).

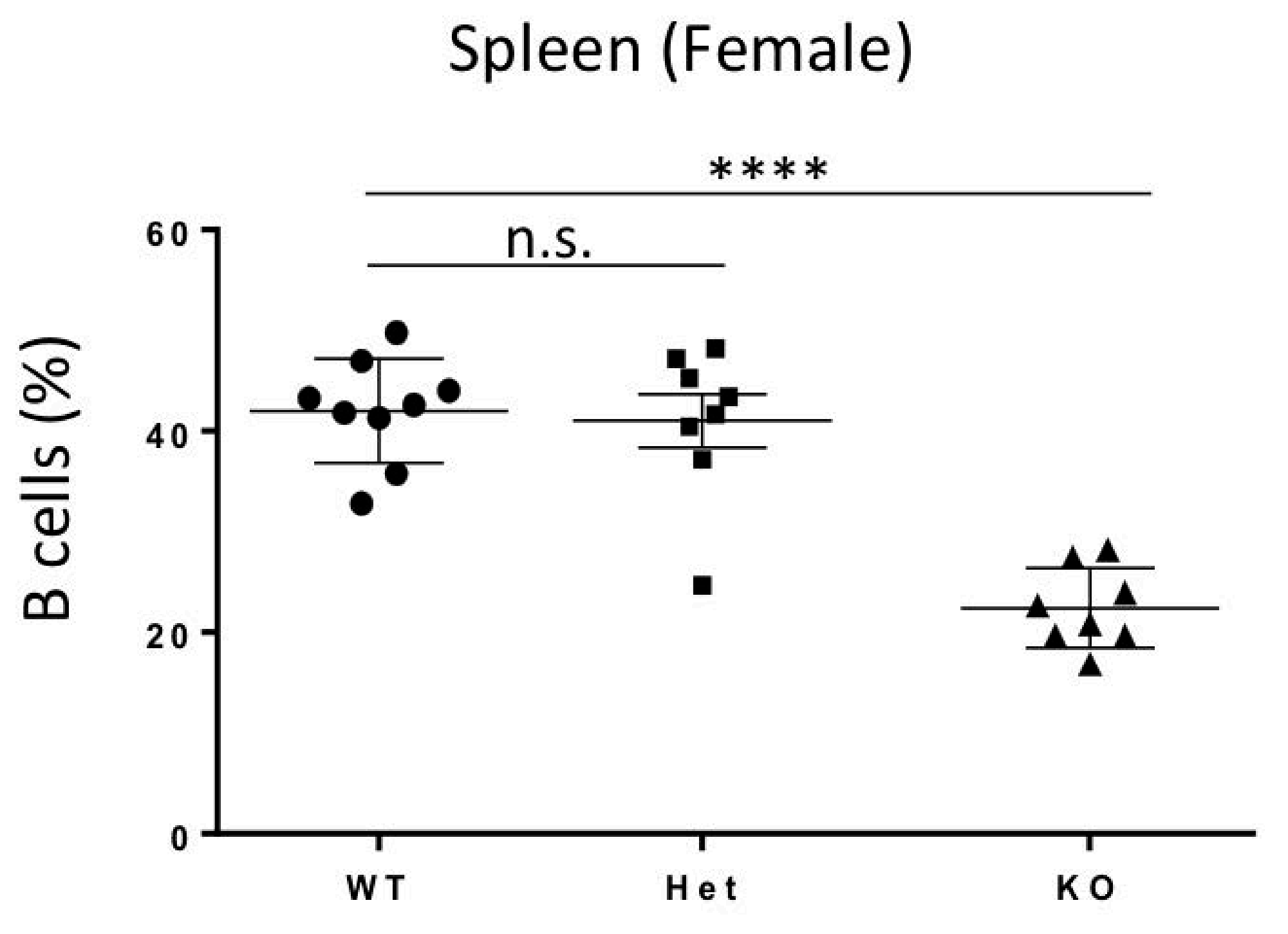
Supplemental Figure 2. Confocal immunofluorescent images of spleen sections from Ifnar1$^{-/-}$, Tlr7$^{-/-}$, ARE-Del$^{-/-}$, ARE-Del$^{-/-}$Ifnar1$^{-/-}$, ARE-Del$^{-/-}$ Tlr7$^{-/-}$ mice compared to control littermates. B lymphocytes (anti-B220), anti-CD4(T lymphocytes), anti-F4/80 (red pulp macrophages), anti-CD169 and MARCO (marginal zone macrophages) were used for detection of the different cell populations.

Supplemental Figure 3. B cell frequency. Spleen from ARE-Del$^{+/-}$ (Het), ARE-Del$^{-/-}$ (KO) and control littermates (WT) were collected at age 20(±2) weeks (n=8-9). The B220 positive B cell population was analyzed by flow cytometry and data represents mean ± SD. Statistical analysis was performed by one-way ANOVA. **** P< 0.0001, n.s., not significant.

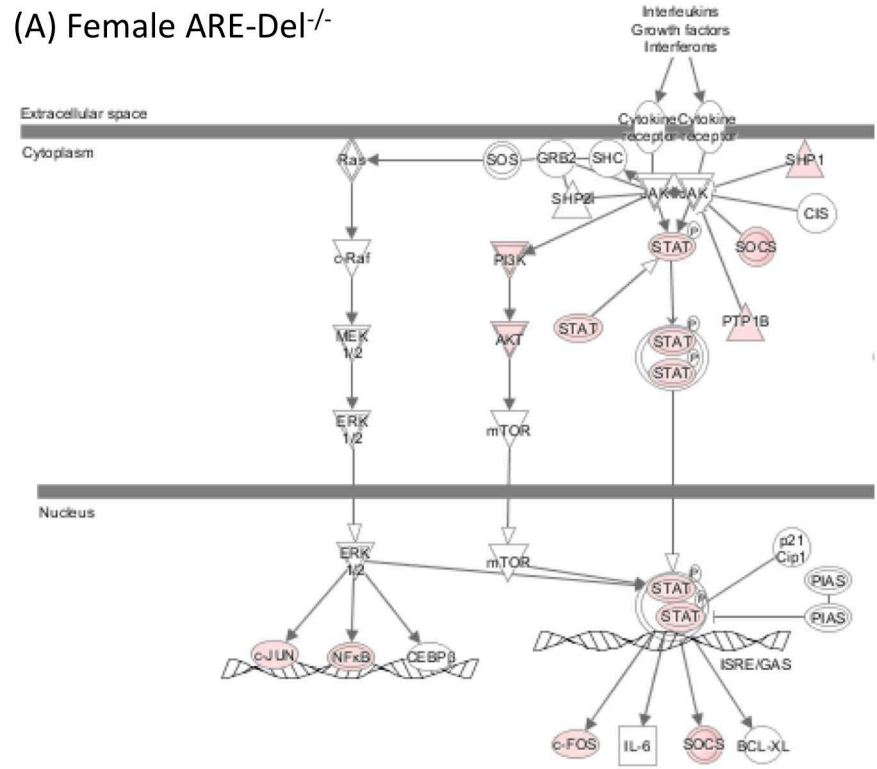
Supplemental Figure 4. Jak-Stat signaling pathway analysis by IPA of the upregulated liver genes from female (A) and male (B) ARE-Del$^{-/-}$ mice. Upregulated liver genes overlay with genes in the signaling as a red color.


A.
-2.0
0.0
2.0
M_WT
M_WT
M_WT
M_WT
M_WT
M_WT
M_KO
M_KO
M_KO
M_KO
M_KO
M_KO
F_WT
F_WT
F_WT
F_WT
F_WT
F_WT
F_KO
F_KO
F_KO
F_KO
F_KO
F_KO
Sptan1
Itga2b
Mpo
Polr3b
Otog1
Trim30a
Hspa5
Cttn
Rplp1
Nup43
Mog
Top1
Irf5
Exosc10
Bip
Ifna2
Eno 1b
Cs
Drc7
Tg
Ssb
Trove2
Psme3
Pla2r1
Ptprn
Ncoa7
Cacna1a
Tnrc6a
Padi3
Tshr
Rplp0
Rpl7
Col17a1
Snrpf
B.
IgM (ARE-Del vs WT)
FDR p-value < 0.05
2
1
33
Male (3)
Female (34)
C.
SP100
PDC-E2
Intensity
1200
800
400
0
1000
800
600
400
200
0
*
*
KO/F
WT/F
KO/M
WT/M


WT
Ifnar1-/-
TLR7-/-
ARE-Del-/-
ARE-Del-/- Ifnar1-/-
ARE-Del-/- TLR7-/-
F4/80
CD169
CD4
B220
300 um


Spleen (Female)
****
n.s.
60
40
20
0
B cells (%)
WT
Het
KO

(A) Female ARE-Del$^{-/-}$



(B) Male ARE-Del$^{-/-}$