Supplementary Table and Figures

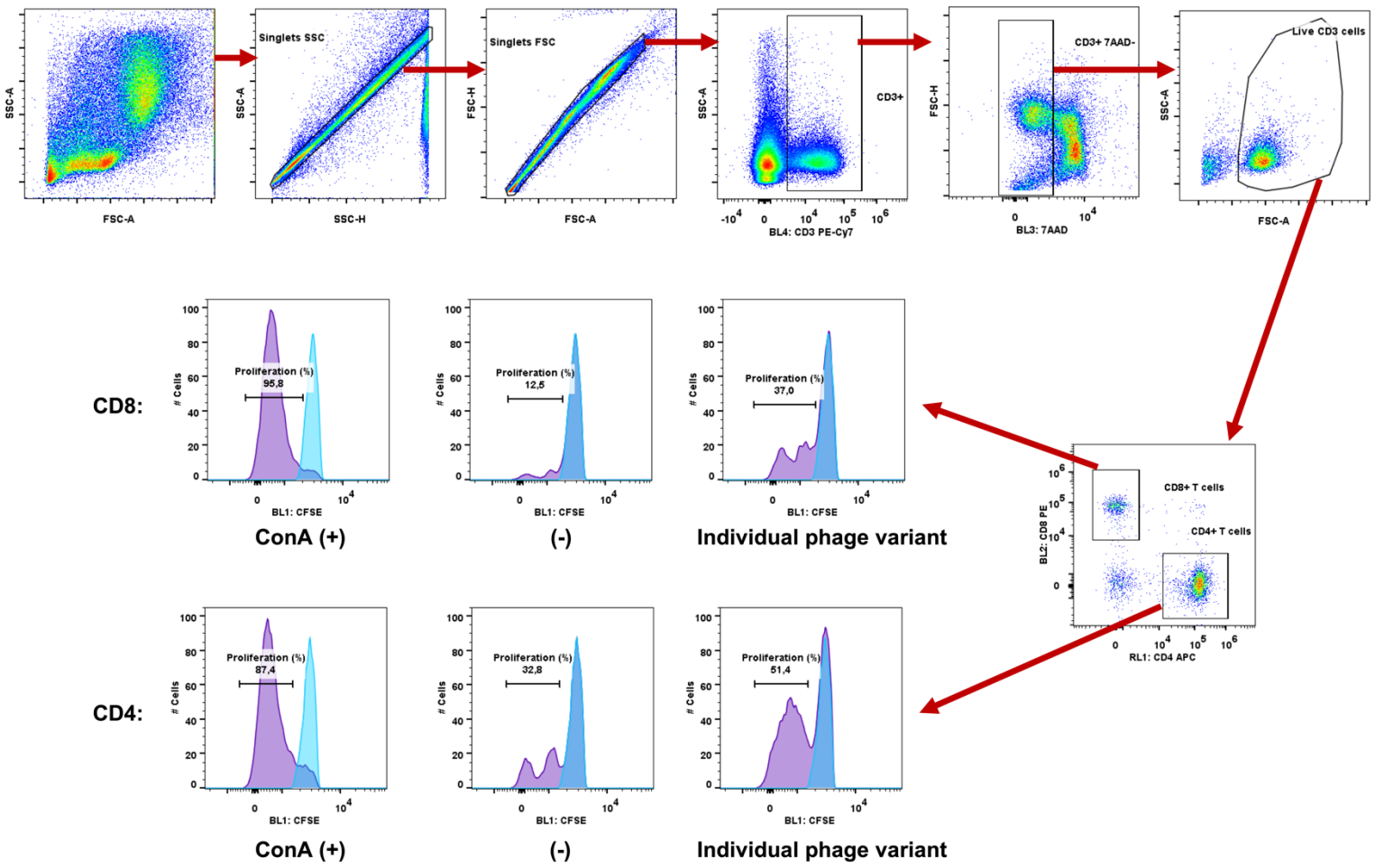
Supplementary Table S1. Synthetic 517 bp DNAs and primers used to generate Survivin (SVN) derived immunogens.

Survivin (SVN) derived immunogens	DNA sequences
WT-Full SVN	ACAGGCTGTCGCCGTGCTCATTTGATCCATGGTGTATATTACTGTGCGATGGGAGCACCAGCACTACCACAAATATGGCAAC TATACCTAAAAAACTACCGAATAGCAACATTCAAAAACTGGCCATTCCTAGAAGACTGCGCATGCACACCAGAACGAATGGC AGAAGCAGGATTCATACACTGCCCAACAGAAAACGAACCAGACCTAGCACAATGCTTCTTCTGCTTCAAAGAACTAGAAGGA TGGGAACCAGACGACAACCCAATAGAAGAACACCGAAAACACTCACCAGGATGCGCATTCCTAACAGTAAAAAAACAAATG GAAGAACTAACAGTATCAGAATTCCTAAAACTAGACCGACAACGAGCAAAAAACAAAATAGCAAAAGAAACAAACAACAAAC AAAAAGAATTCGAAGAAACAGCAAAAACAACACGACAATCAATAGAACAACTAGCAGCATGGGGCCAGGGAACCTAGGGAT CCATCAGAAGGGATCTTGCTGCCGCCC
VEL-Full SVN	ACAGGCTGTCGCCGTGCTCATTTGATCCATGGTGTATATTACTGTGCGATGGGAGCACCANNKCTACCACAAATATGGCAAC TATACCTANNKAACTACNNKATAGCANNKTTCAAAAACTGGCCATTCCTANNKGACNNKGCANNKACACCANNKCGAATGGC AGAAGCAGGATTCATACACTGCCCAACAGAAAACGAACCAGACCTAGCACAANNKTTCTTCTGCTTCNNKGAACTAGAAGGA TGGNNKCCANNKGACNNKCCAATAGAAGAANNKCGAAAACACTCACCAGGATGCGCATTCNNKACANNKAAANNKCAAATG GAANNKCTAACANNKTCANNKTTCCTAAAACTANNKCGACAANNKGCAAAAAACAAANNKGCAAAAGAAACAAACAACAAAC AAAAANNKTTCGAAGAAACAGCANNKACAACACGACAATCAATAGAACAACTAGCAGCATGGGGCCAGGGAACCTAGGGAT CCATCAGAAGGGATCTTGCTGCCGCCC
	Primers (Oligonucleotides)*
WT-Full SVN **VEL-Full SVN**	**5SF:** TATTCGTCTGCAGGACCATGGTGTATATTACTGTGCGATG **3SNT:** TACTTATCTAGAGGATCCCTAGGTGACCGCTTCTGCCATTCG
WT-NT **VEL-NT**	**5SF:** TATTCGTCTGCAGGACCATGGTGTATATTACTGTGCGATG **3SFX:** ATACGTTCTAGAGGATCCCTAGGTTCCCTGGCC
WT-Core **VEL-Core**	**5SM:** GCTATCCTGCAGGACCATGGAGCAGGATTCATACACTGC **3SM:** TATATTGTCTAGAGGATCCCTAGGTGACCACTTCCATTTG
WT-CT **VEL-CT**	**5SCT:** TTACATGCTGCAGTACCATGGTCAAATGGAA **3SNT:** TACTTATCTAGAGGATCCCTAGGTGACCGCTTCTGCCATTCG

NNK: where N= G, A, T or C and K= G or T.

*Oligonucleotide (oligos) pairs carrying Nco I and Bam HI restriction sites (underlined in oligos).

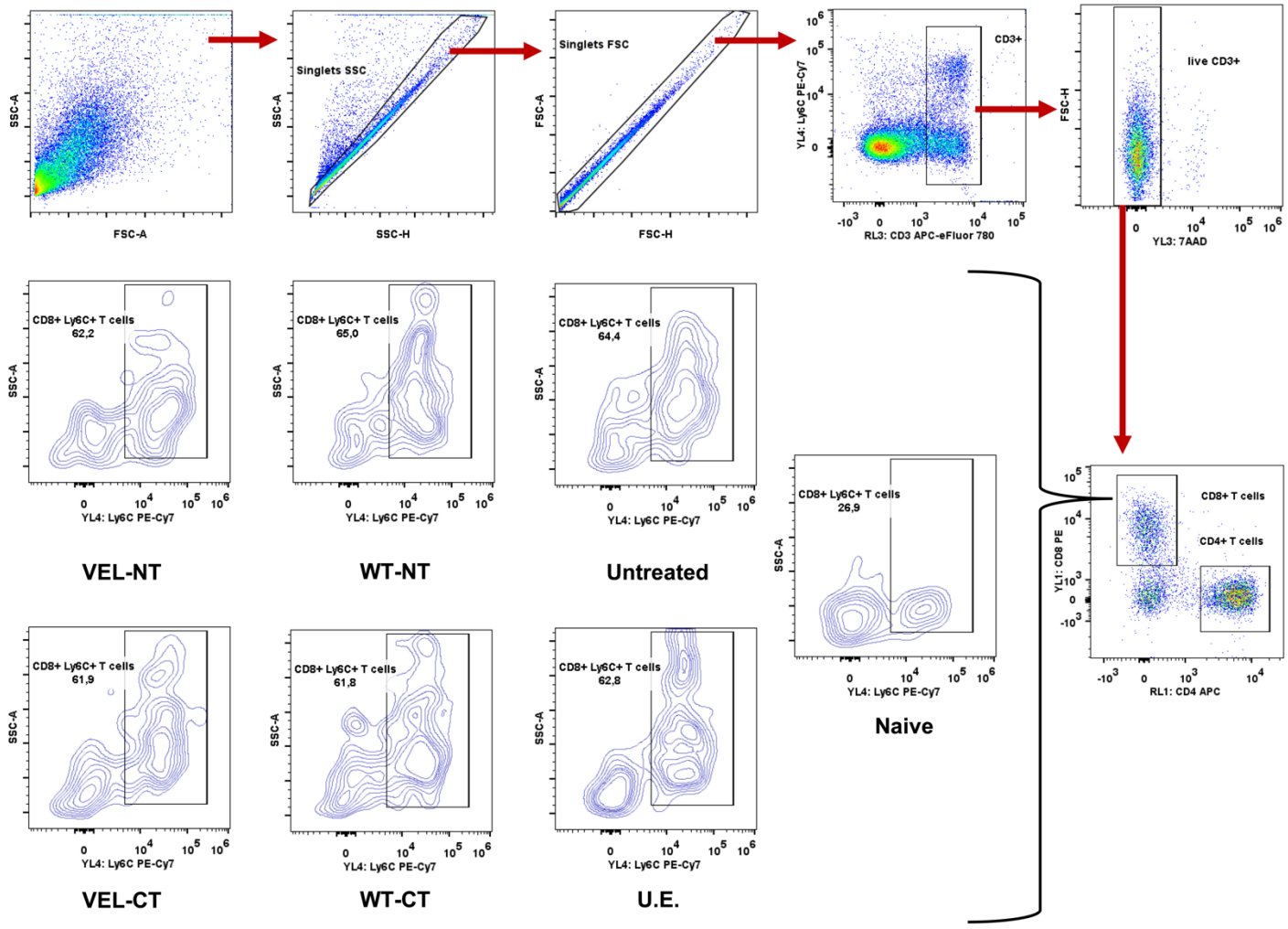
Supplementary Figure S1



Supplementary Figure S1. Representative flow cytometric analysis of $CD4^+$ and $CD8^+$ T cell proliferation, derived from spleen cells using CFSE.

This figure shows the staining of $CD4^+$ and $CD8^+$ spleen cells with CFSE, histograms for controls are also shown: positive for proliferation using concanavalin A (ConA), negative for proliferation (without stimulation) and a stimulus with an individual variant antigen displayed on phage.

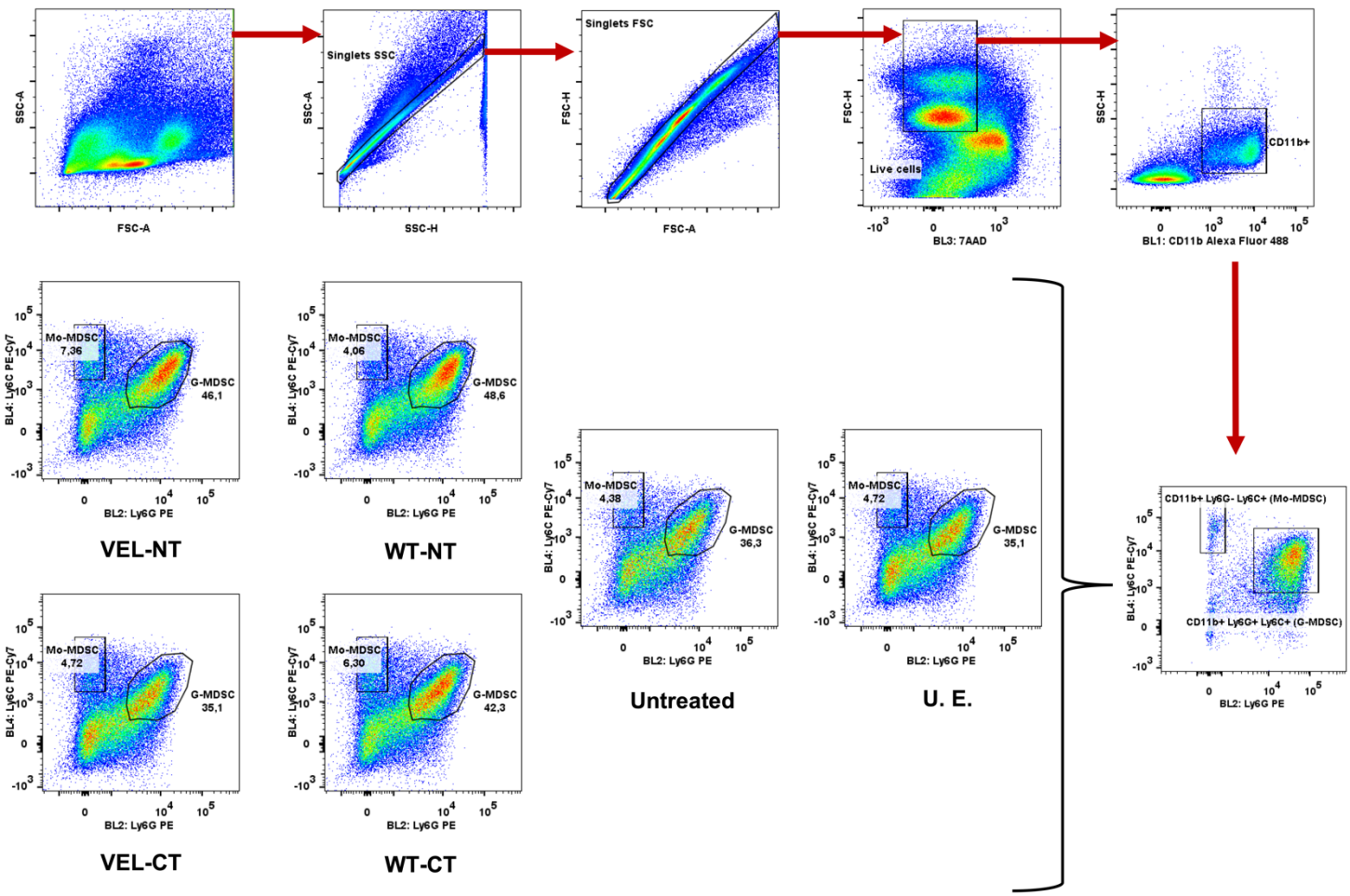
Supplementary Figure S2



Supplementary Figure S2. Representative flow cytometric analysis of $CD8^{+}Ly6C^{+}$ effector T cell phenotyping from lung tissue samples.

Figure represents $CD8^{+}Ly6C^{+}$ effector T cells. The following gating strategy was applied to obtain results: cells separated into double singlets; identification of live $CD3^{+}$ cells; identification of $CD8^{+}$ and $CD4^{+}$ from previous; and finally, identification of effector $CD8^{+}Ly6C^{+}$ T cells. Representative dot plot graphs shown for treatments with VEL-NT, WT-NT, VEL-CT, WT-CT, Untreated, U.E. and naive mice.

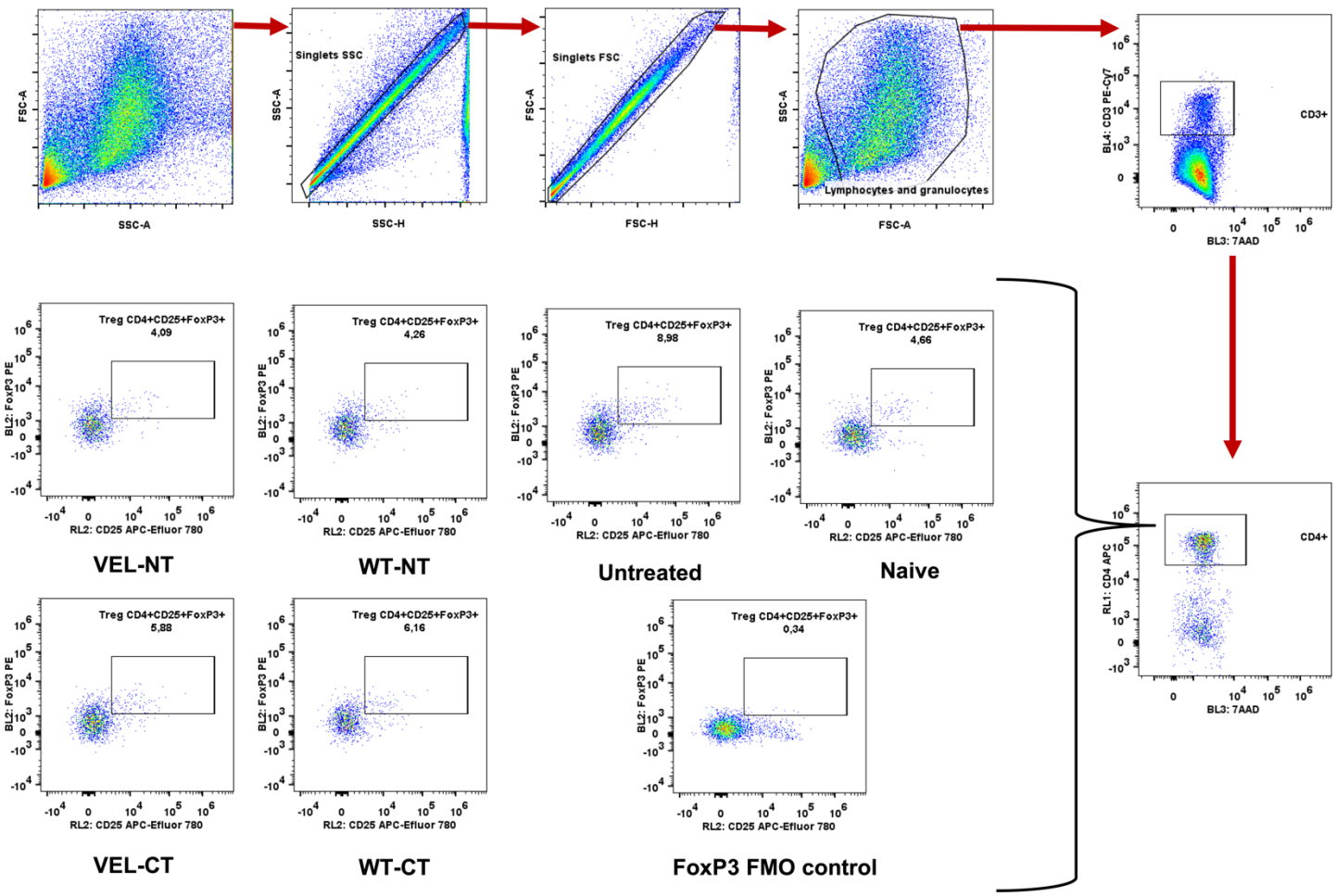
Supplementary Figure S3



Supplementary Figure S3. Representative flow cytometric analysis of $CD11b^{+}Ly6C^{int/low}Ly6G^{+}$ granulocytic myeloid-derived suppressor cells (G-MDSCs) phenotyping from tumor tissue sample.

Figure represents gating strategy used to identify G-MDSC cells. Separation of cells into double singlets; identification of live $CD11b^{+}$cells; and finally, identification of $CD11b^{+}Ly6C^{int/low}Ly6G^{+}$ cells. Representative dot plot graphs shown for treatments with VEL-NT, WT-NT, VEL-CT, WT-CT, Untreated, U.E.

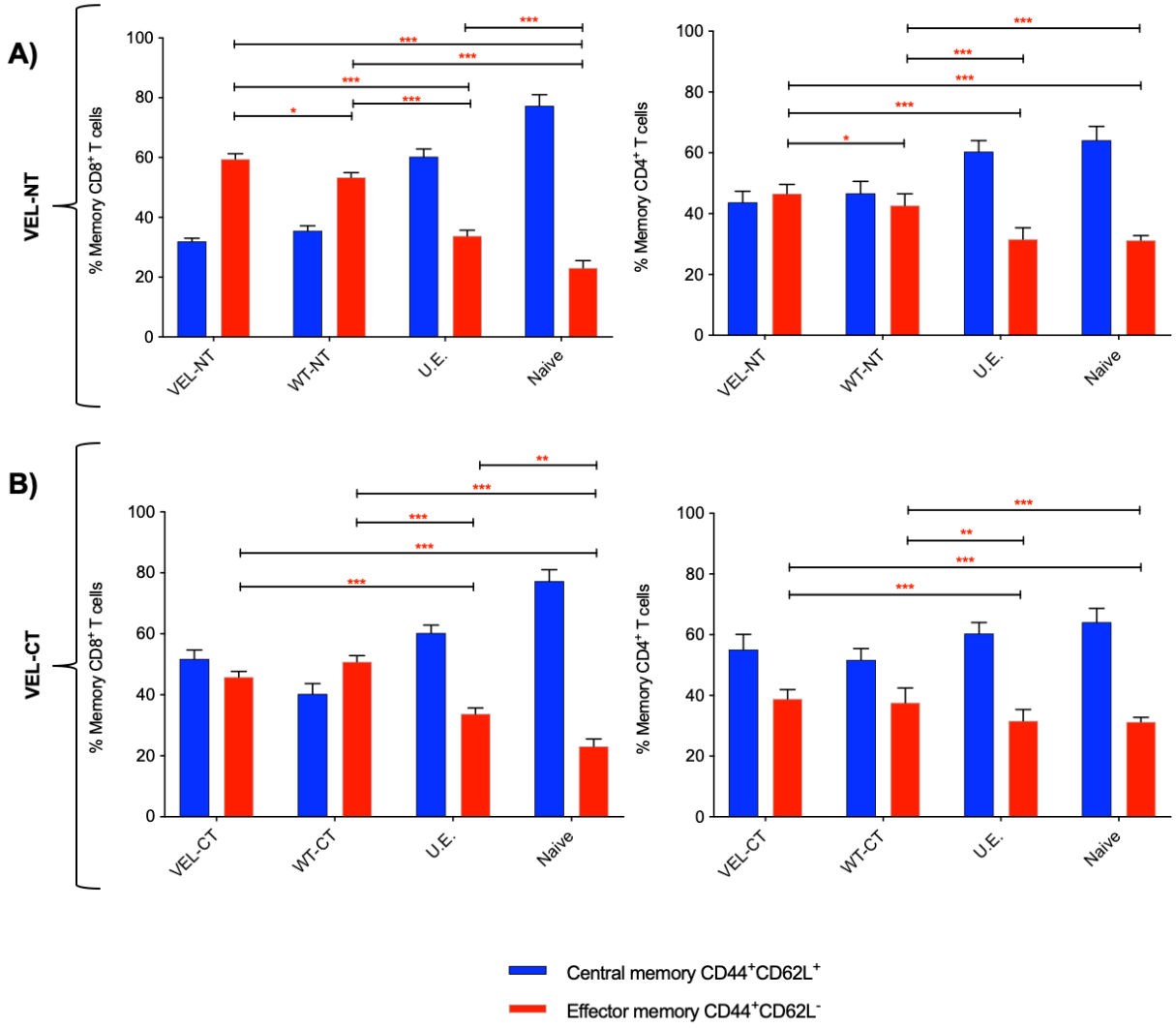
Supplementary Figure S4



Supplementary Figure S4. Representative flow cytometric analysis of $CD4^+CD25^+FoxP3^+$ regulatory T cells (T_{regs}) phenotyping from lung tissue sample.

Figure represents strategy used to identify T_{reg} cells. Separation of cells into double singlets; identification of live $CD3^+CD4^+$ cells; and finally, identification of $CD4^+CD25^+FoxP3^+$cells. Representative dot plot graphs are shown for treatments with VEL-NT, WT-NT, VEL-CT, WT-CT, Untreated, Naive mice and Fluorescence Minus One (FMO) Control for FoxP3.

Supplementary Figure S5



Supplementary Figure S5. The phenotyping of Memory T cells.

We measured by multiparametric flow-cytometry *ex-vivo* the presence of central memory and effector memory $CD8^+$ and $CD4^+$ T cells within the spleens, showing significantly higher level of effector memory T cells in mice immunized with VEL-NT **(A)** or VEL-CT **(B)** at day 90 after vaccination. Percentages of T cells (%) are presented as mean $\pm$ 95 CI and were analyzed with two-way ANOVA for repeated measurements and Sidak "post-hoc" test for multiple comparisons (**P < 0.033, **P < 0.02, ***P < 0.001*).