

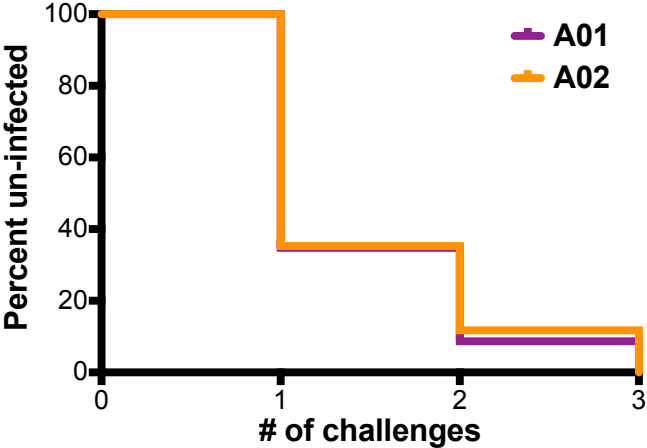
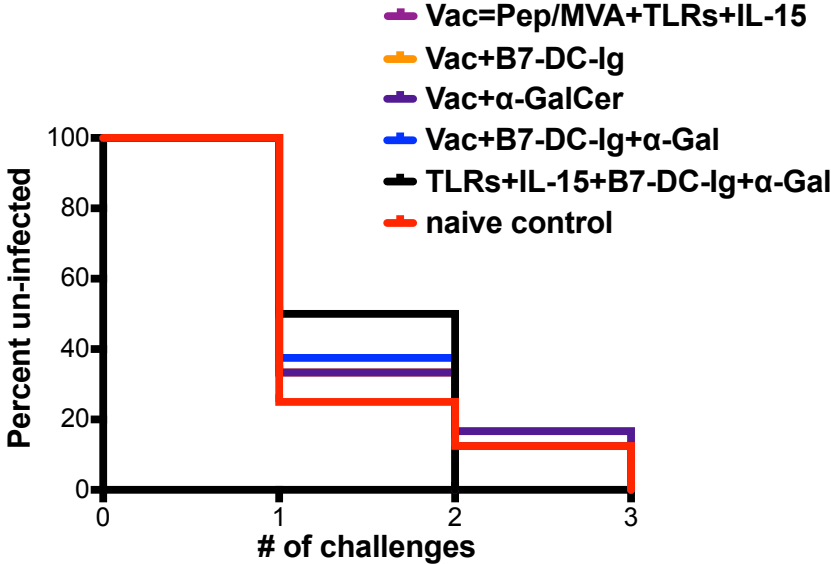
Supplementary Table 1: MHC types of the rhesus macaques included in the study

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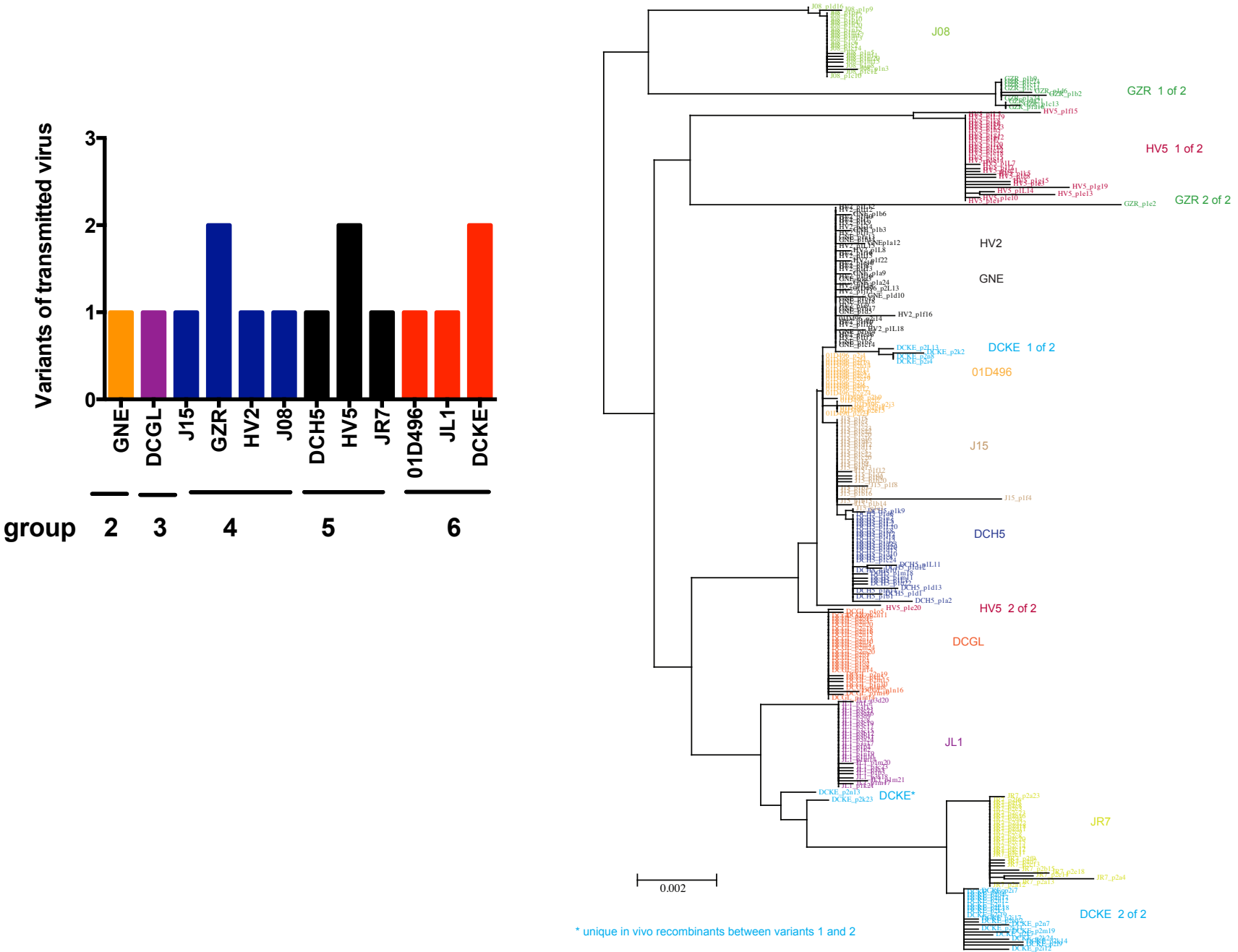
Supplementary Table 2: Peptide/MVA-SIV included in vaccine

Peptide/MVA-SIV	CD4 ⁺ helper and CD8 ⁺ CTL epitopes	MHC
Peptide 1. HIV gp120 242-261	VSTVQCTHGIRPVVSTQLLL	DRB*0406
Peptide 2. HIV gp120 482-497	ELYKYKVVKIEPLGVA	DRB*w201
Peptide 3. SIV Gag 260-274	GNIYRRWIQLGLQKC	DRB*w201
Peptide 4. SIV Rev	RKRLRLIHLHQT	DRB*w201
Peptide 5. SIV Gag260-264-p11c	GNIYRRWIQLGLQKCCTPYDINQML	A*01
Peptide 6. SIV Gag 260-274-Tat 28-35	GNIYRRWIQLGLQKCSTPESANL	A*01
PCLUS3-CL10 (HIV-env+SIV-Gag181):	KQIINMWQEVGKAMYAPPISGQIRCTPYDINQML	A*01
PCLUS6.1-CL10 (HIV-env+SIV-Gag181):	DRVIEVVQGAYRAIRHIPRRIRQGLERCTPYTDINQML	A*01
PCLUS3-Pol143 (HIV-env+SIV-Pol143):	KQIINMWQEVGKAMYAPPISGQIRLGPHYTPKIV	A*01
PCLUS3-Gag372 (HIV-env+SIV-Gag372)	KQIINMWQEVGKAMYAPPISGQIRLAPVPIPFA	A*01
PCLUS3-Tat2 (HIV-env+HIV-Tat2):	KQIINMWQEVGKAMYAPPISGQIRKHPGSQPKTA	A*01
PCLUS3-Tat3 (HIV-env+HIV-Tat3):	KQIINMWQEVGKAMYAPPISGQIRVDPRLEPW	A*01
PLCUS3-Vif (HIV-env+SIV-Vif):	KQIINMWQEVGKAMYAPPISGQIRQVPSLQYLA	A*01
PLCUS3-Gag (HIV-env+SIV-gag71-79)	KQIINMWQEVGKAMYAPPISGQIRGSENLKSLY	A*02
PLCUS3-Nef((HIV-env+SIV-Nef159-167)	KQIINMWQEVGKAMYAPPISGQIR YTSGBPGRY	A*02
PLCUS3- Nef (HIV-env+SIV-Nef 169-177)	KQIINMWQEVGKAMYAPPISGQIR KTFGWLWKL	A*02
PLCUS3- Vif (HIV-env+SIV-Vif 97-104)	KQIINMWQEVGKAMYAPPISGQIR WTDVTPNY	A*02
PLCUS3-Pol (HIV-env+SIV pol 324-332)	KQIINMWQEVGKAMYAPPISGQIR FSIPLDEEF	A*02
MVA--Gag, Pol, Env		
MVA-Rev, Tat, Nef		

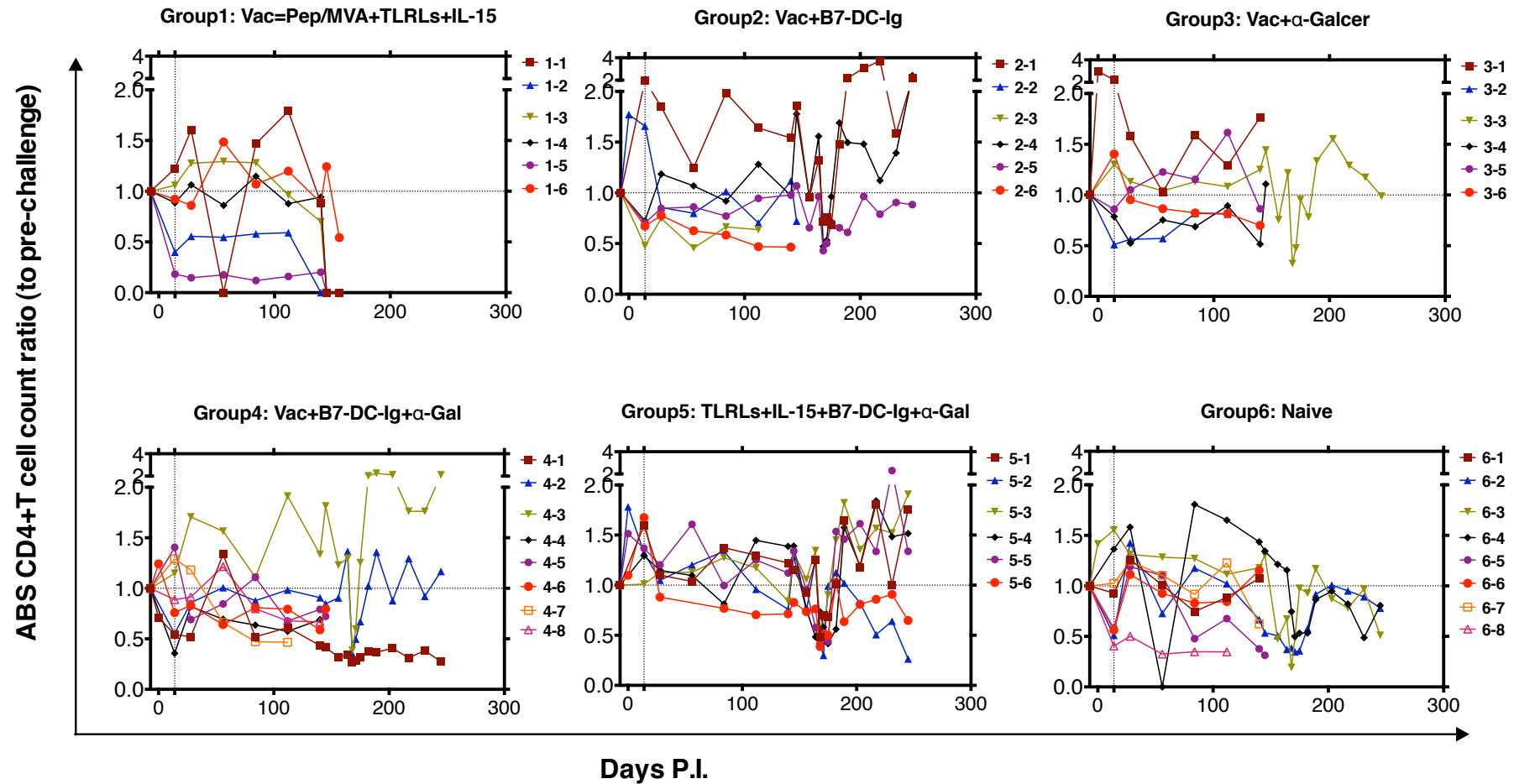
Supplementary Fig.1 SIV_{mac251} viral acquisition



Supplementary Fig 2. Variants and evolution tree of transmitted virus

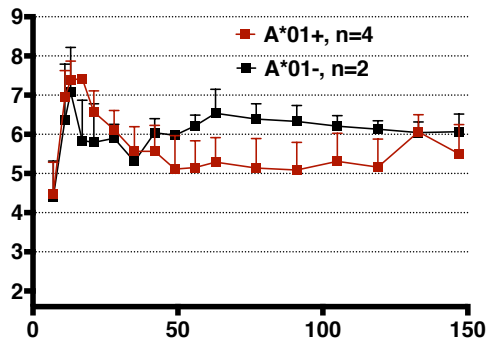


Supplementary Fig.3 Absolute CD4+T cell counts in the PBMCs



Supplementary Fig. 4 Group 3 showed a difference in viral loads between Mamu-A*01-positive and negative animals if only female animals were examined.

Gr 3-Vac+TLRLs+IL-15+α-Gal-All animals



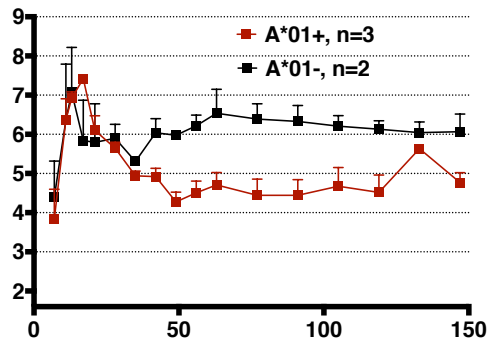
Mean ± SEM VLs from day 7 to Day 147

VLs in All animals:

A*01 +: 5.76 ± 0.21

A*01 -: 6.04 ± 0.14

Gr 3-Vac+TLRLs+IL-15+α-Gal-Female only



VLs in Female only: Mean ± SEM

A*01 +: 5.18 ± 0.24

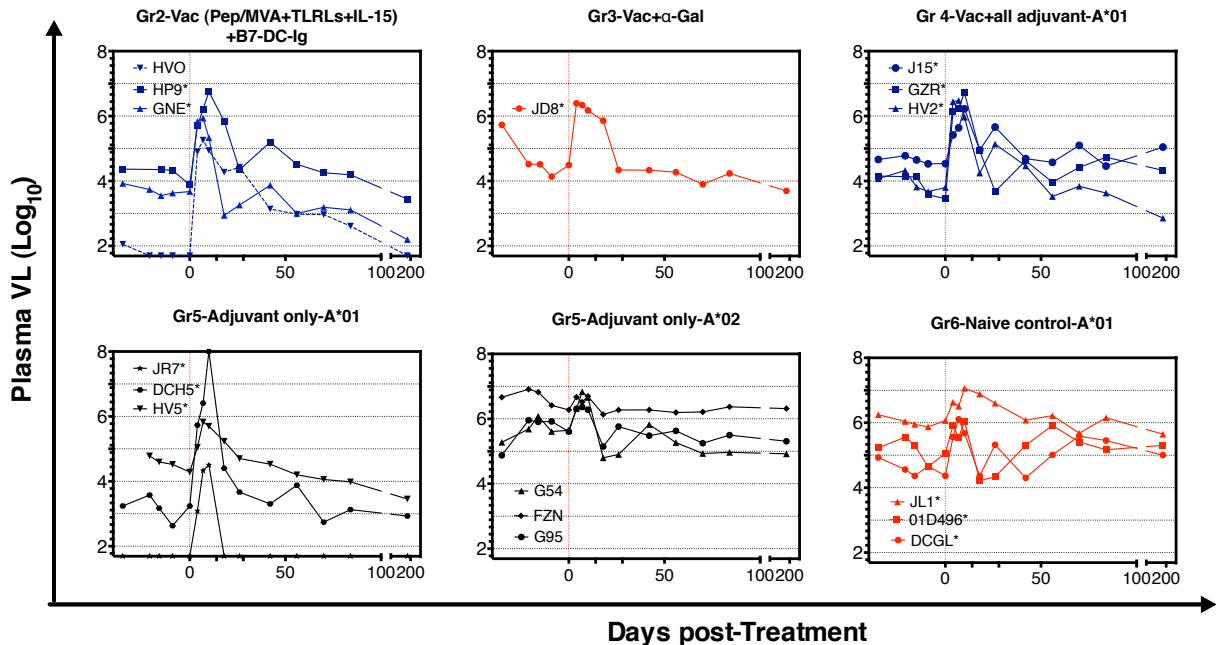
A*01 -: 6.04 ± 0.14

Mann Whitney test to compare the mean VLs of A*01+ and A*01- animals:

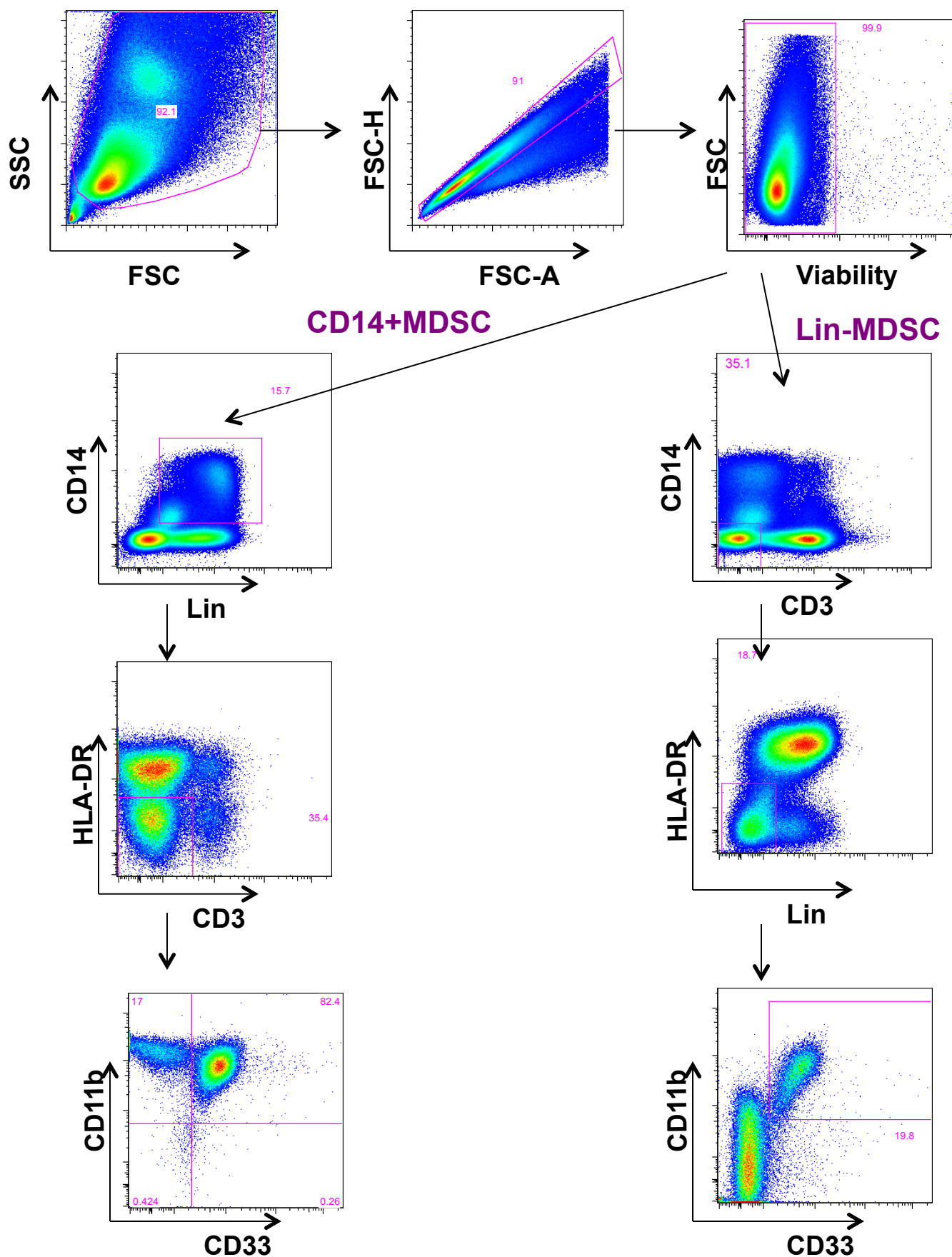
All animals: $p=0.11$

Female-only animals: $p=0.0085$**

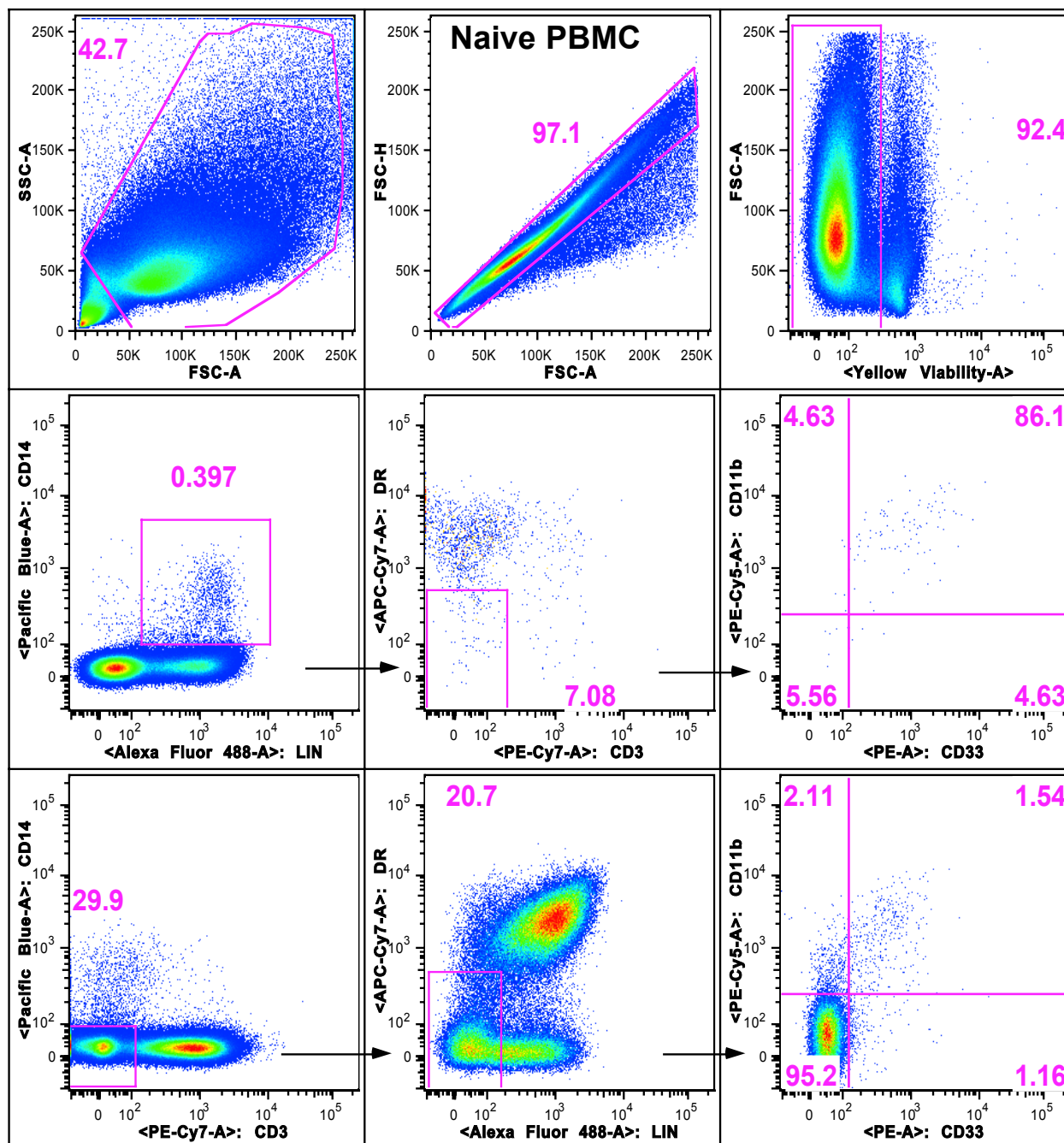
Supplementary Fig. 5 CD8 depletion study confirmed that the viral control in adjuvant-only control was CD8-dependent



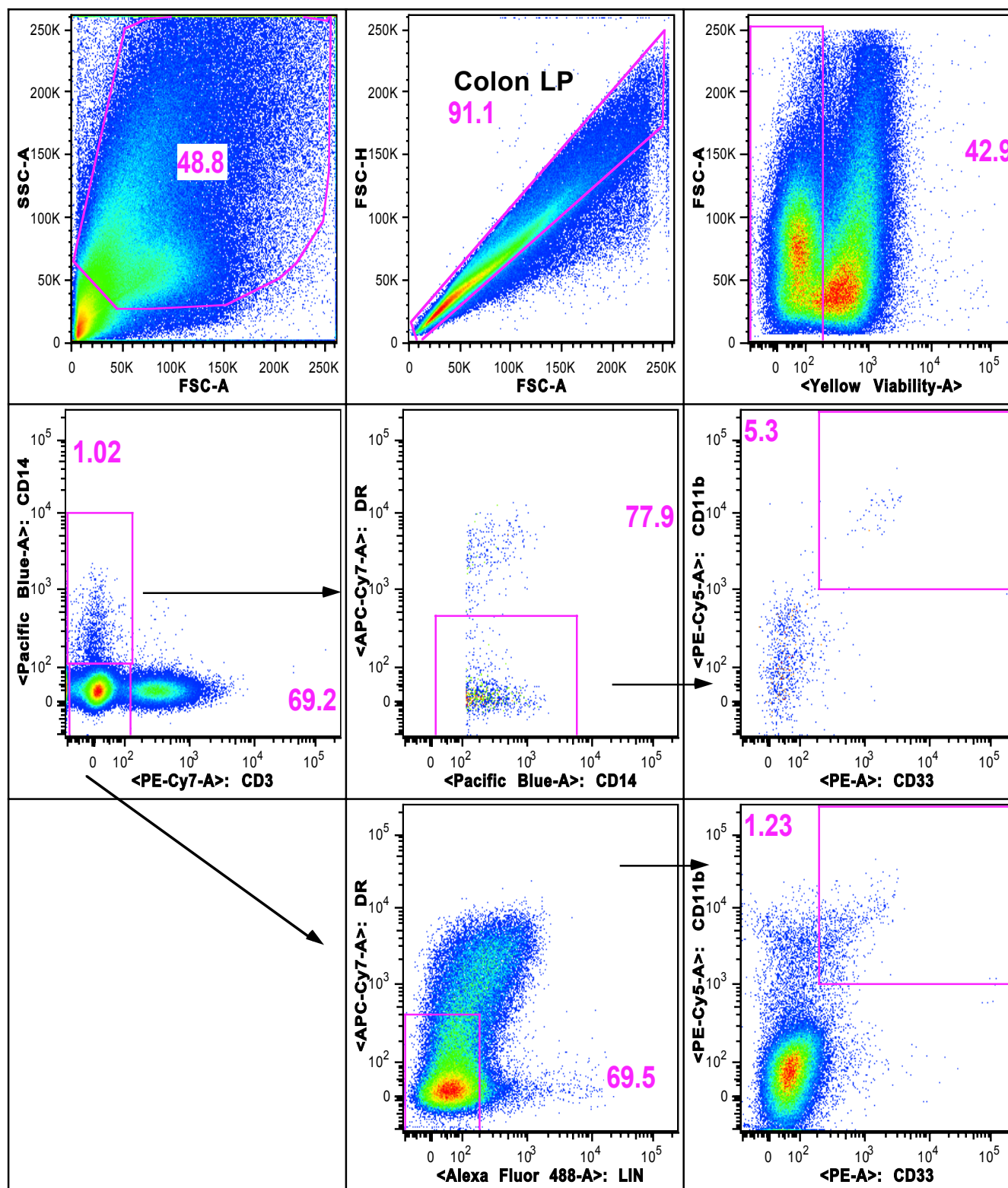
Supplementary Fig. 6A Gating strategies for CD14+MDSC and Lin-MDSC in PBMC (from one vaccinated animal)



Supplementary Fig. 6B Gating strategies for CD14+MDSC and Lin-MDSC in PBMC (from one naive animal)



Supplementary Fig. 6B Gating strategies for CD14+MDSC and Lin-MDSC in colon lamina propria (from one vaccinated animal)



Supplementary Fig. 7 Set-point VL correlated positively with the MDSC/CD8+T ratio in the post first (a&b) and second (c&d) boost PBMCs. Spearman analysis of correlation was used to calculate the R and p values. The lines are the linear regression lines.

