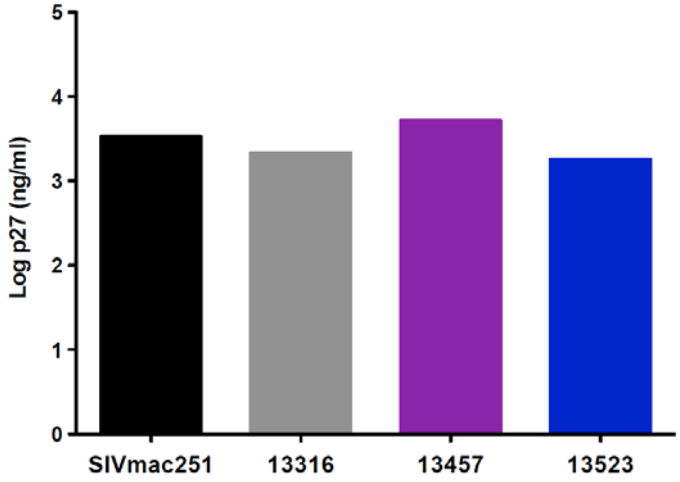
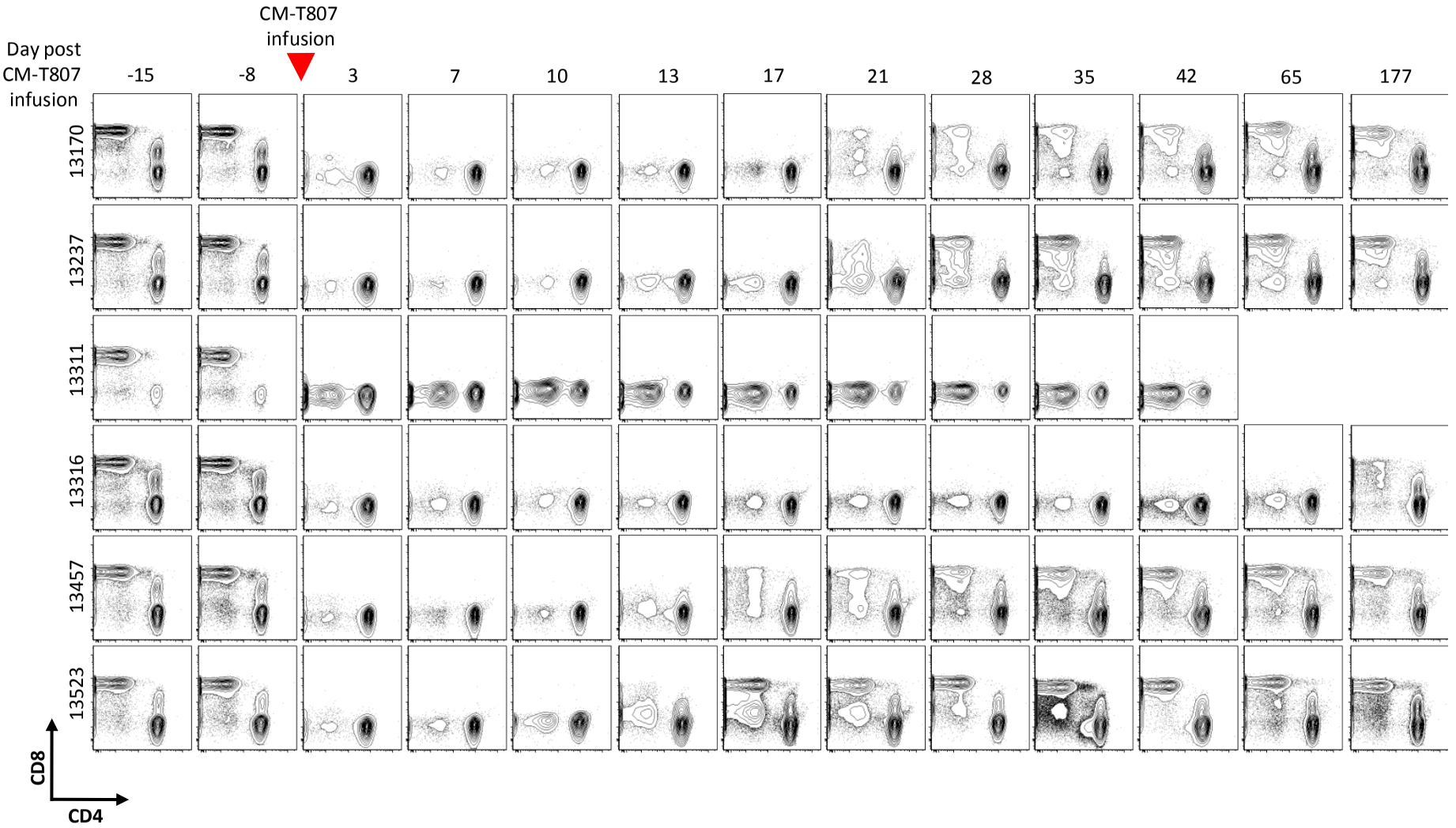
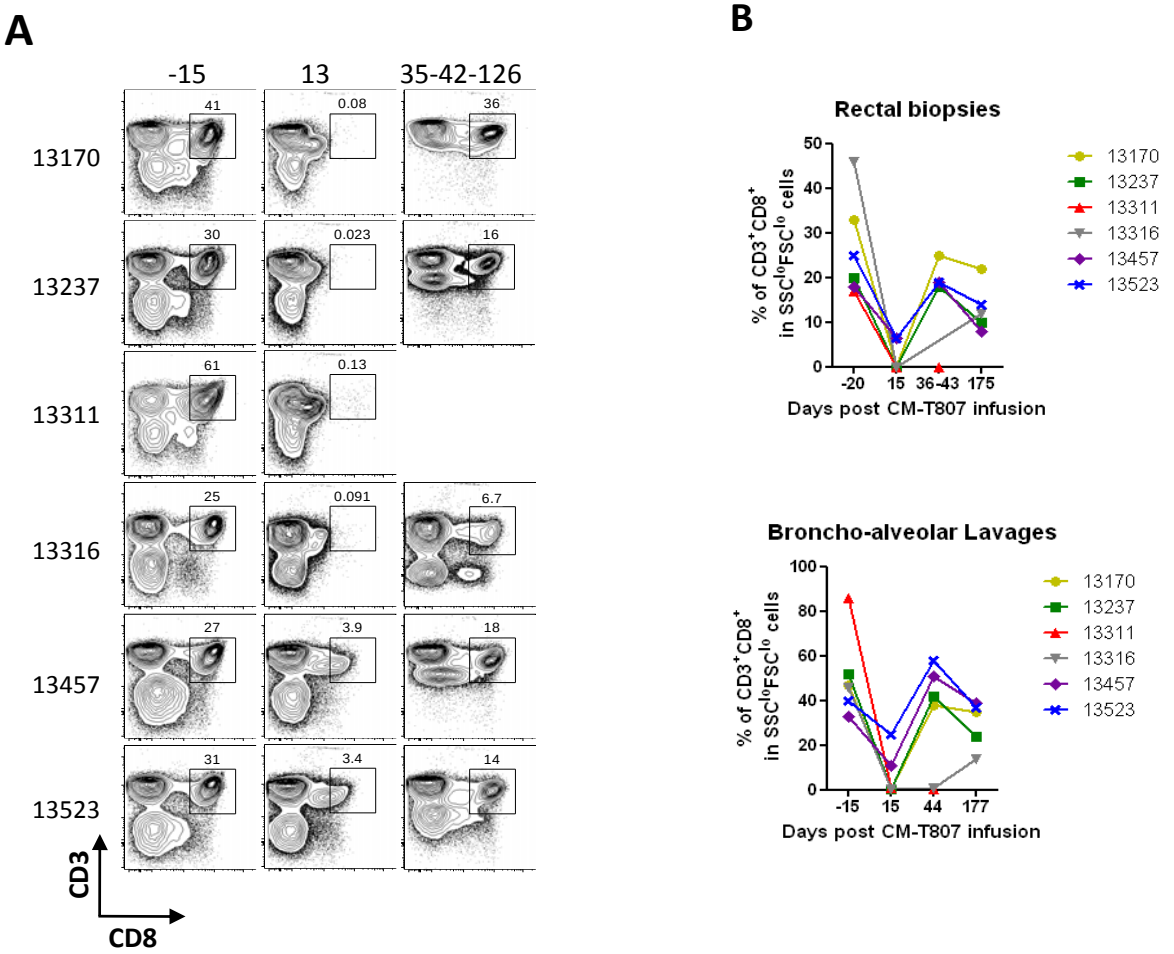


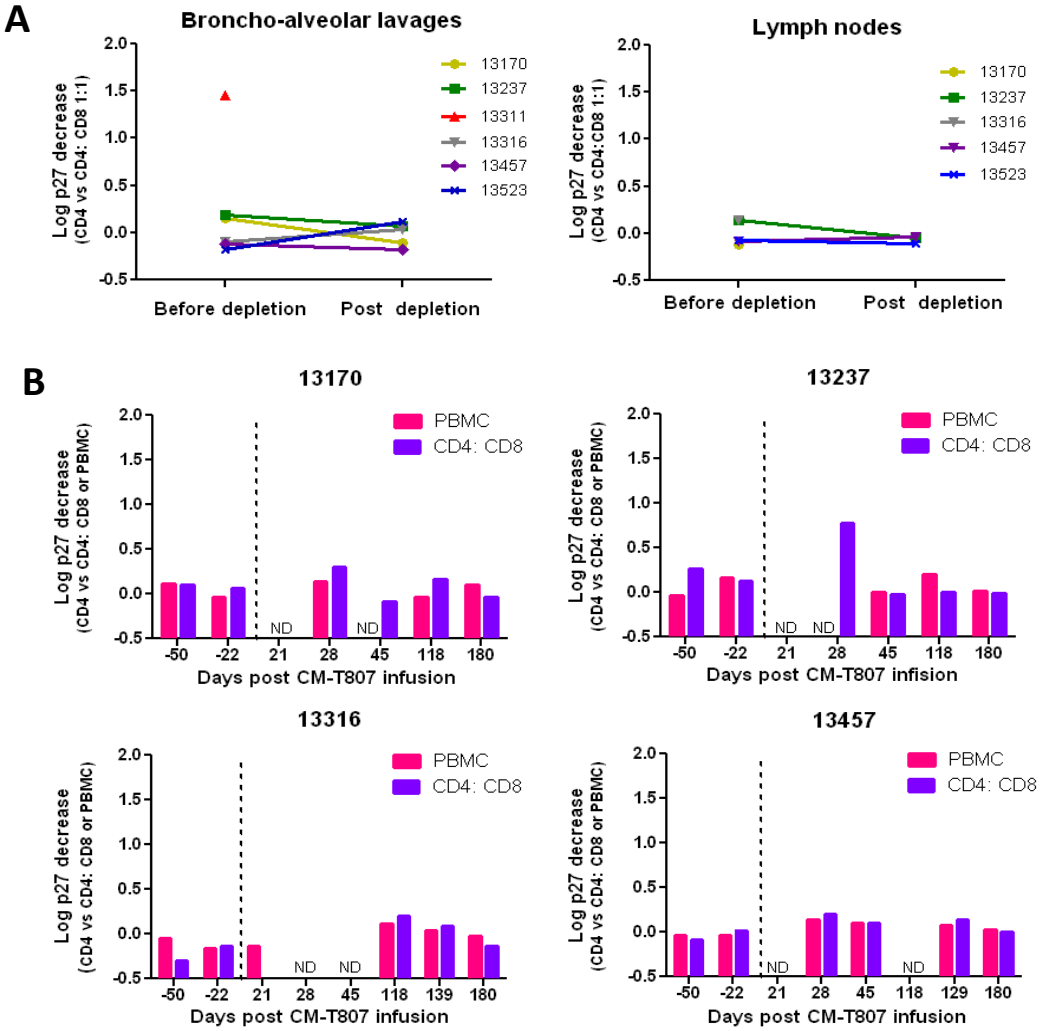
Supplementary Figure 1: replication capacity of viral isolates. Viral isolates from controller macaques #13316, #13457 and #13523 were obtained upon in vitro activation of CD4+ T cells and culture for 2 weeks. A similar amount of 200 ng of p27/10^6 cells of these isolates and of the original virus used to expose the animals (SIVmac251) was used to infect primary CD4 T cells from a healthy CyM. Peak viral replication is shown.



Supplementary Figure 2: Dot plots illustrating CD8⁺ T-cell depletion in peripheral blood after CM-T807 mAb infusion. CD4/CD8 dot plots are gated on $CD45^{+}CD3^{+}$ cells and plots for each time point of the depletion experiment for the six macaques of the 5 AID_{50} group are shown.

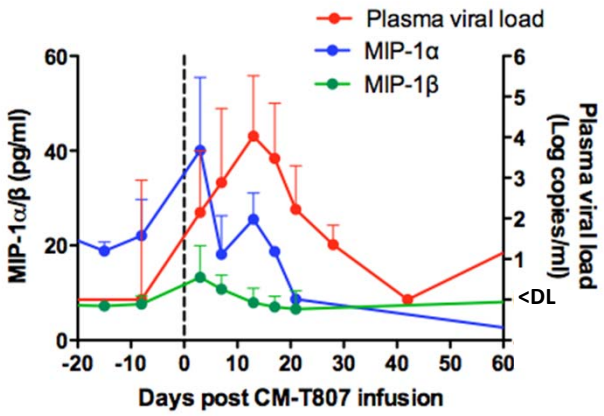


Supplementary Figure 3: Evolution of CD8⁺ T cells in the lymph nodes, rectum and broncho-alveolar lavage in the depletion experiment for the six macaques of the 5 AID_{50} group. (A) Dot plots illustrating CD8⁺ T-cell depletion in lymph nodes after CM-T807 mAb infusion**. (B)** Evolution of CD8⁺ T cells in RB **(upper graph)** and BAL **(lower graph)** samples by flow cytometry. $CD3^+CD8^+$ T cells were gated in $CD45^+$ cells.



Supplementary Figure 4: Evolution of SIV suppressive activity of peripheral and tissue CD8 T cells. (A) Evolution of suppressive capacity of $CD8^+$ T-cells isolated from lymph nodes and broncho-alveolar lavages before depletion and after $CD8^+$ T-cell recovery. **(B)** Suppression of SIV replication measured in both PBMC and CD4:CD8 cocultures (ratio 1:1) in comparison to isolated cultures of infected $CD4^+$ T cells from macaques #13170, #13237, #13457 and #13316.

Supplementary Figure 5: Evolution of T-cell responses specific for the individual ORFs that were examined- Gag, Rev, Vif, and Nef- as assayed by intra cellular staining, after stimulation with overlapping peptide pools. Data are presented as the proportion of each antigen-specific response within total responding cells (being at least positive for one cytokine including IFNg, TNFa, MIP1b and IL-2). The proportions of cells responding to Gag (Blue), Nef (Green), Rev (Red), or Vif (Violet) are displayed in each pie. ND= not done (13311 died before day72). NA=Not applicable (when samples did not contain enough CD8+ T cells). 13311 died before any reconstitution of CD8+ cells and 13316 exhibited extremely late partial reconstitution of CD8+ cells (See Figure 3C).



Supplementary Figure 6: Evolution of concentrations of b-chemokines in plasma. Temporal association between plasma β-chemokine concentrations and plasma viral load in SIV controllers. Median and range are shown.

Supplementary Table 1 : Monoclonal antibodies used for immunophenotyping

Cluster	Clone	Fluorochrome	Manufacturer
CD3	SP34.2	APC-Cy7	BD Pharmingen
CD3	SP34.2	Alexa Fluor 700	BD Biosciences
CD3	SP34.2	Horizon v500	BD Biosciences
CD4	L200	PerCP-Cy5.5	BD Biosciences
CD4	L200	PE	BD Biosciences
CD4	L200	PE-Cy7	BD Biosciences
CD8	RPA-T8	Horizon v500	BD Biosciences
CD8	BW135/80	VioBlue	Miltenyi
CD8	DK25	Pacific Blue	Dako
CD28	CD28.2	ECD	Beckman Coulter
CD38	AT-1	FITC	StemCell
CD45	D058-1283	PerCP	BD Biosciences
CD45RA	L48	PE-Cy7	BD Biosciences
CD69	FN50	PE-Cy7	Ozyme
CD69	FN50	APC-Cy7	Ozyme
CD95	DX2	APC	BD Bioscience
CD154	TRAP1	FITC	BD Pharmingen
CD195 (CCR5)	3A9	PerCP-Cy5.5	BD Biosciences
CD197 (CCR7)	FAB197P	PE	R&D
HLA-DR	L243	APC-H7	BD Biosciences
Ki67	MIB-1	FITC	DAKO
MIP-1β	D21-1351	PE	BD Biosciences
IFNγ	B27	V450	BD Biosciences
IL-2	MQ1-17H12	APC	BD Pharmingen
TNFα	MAb11	Alexa Fluor 700	BD Pharmingen