



Supplementary Figure 1. SHIV89.6 immunization decreases the frequency of CD8⁺ CD38⁺ T cells in blood and abrogates the correlation between CD38 expression on T cells and age in RM. Flow cytometry was used to determine the percentage of CD38⁺ T cells in blood of SHIV-immunized RM from the day of SHIV immunization to the day of SIV challenge (A) CD8⁺ T cells and (D) CD4⁺ T cells. P values were generated using Tukey's multiple comparison post-hoc test after a one-way ANOVA indicated a significant difference existed among the time points sampled. Each animal is represented by a symbol. Pearson's correlation was used to analyze the degree of association between age and CD38 expression in (B) CD8⁺ T cells and (E) CD4⁺ T cells of normal monkeys, and in (C) CD8⁺ T cells and (F) CD4⁺ T cells of SHIV immunized RM on the day of SIV challenge. P values are indicated.

Supplementary Table 1. Age and Virology of Animals at Necropsy.

Group	Date of necropsy after challenge	Animal ID	Age in years at necropsy	Log10 SIV GAG copy number / ml plasma at necropsy	
SHIV	0 days	32357	6.3	1.7	
		32365	6.3	1.7	
		25907	15.4	1.7	
		29372	10.4	1.7	
		26817	14.3	3.5	
		30886	8.4	1.7	
		30851	9.1	1.6	
		30616	9.2	1.5	
		30811	9.2	1.7	
	3 days	31298	8.3	1.4	
		32664	6.11	1.5	
		30831	9.2	2.8	
	7 days	26820	14.2	2.1	
		26833	14.3	2.7	
		27076	14.1	1.7	
		28415	12.2	2.3	
		31631	7.4	1.9	
		27373	13.4	1.7	
	14 days	31371	7.5	2.2	
		27130	14.1	2.3	
		28843	11.4	5.1	
		31475	7.4	1.7	
		25988	15.3	2.2	
		32330	6.3	4.0	
		32578	7	2.9	
		28850	12.1	2.7	
		32427	7.1	1.7	
		30906	9.2	2.9	
		26960	15	3.2	
		30933	9.2	1.9	
	SIV	3 days	28257	13	1.7
			29599	10.11	1.7
			28167	13	1.7
7 days		29612	10.5	1.7	

		29683	10.4	1.7
		30678	8.6	1.7
		27768	13	1.7
		28953	11.1	5.3
		28726	11.2	1.7
		30322	9.11	4.1
		28752	12	5.3
		26715	15	5.0
	14 days	30946	8.5	7.3
		31391	7.6	6.1
		32604	6.4	7.3
		28629	11.3	6.9
		28827	11.2	6.8
		28366	12.1	6.4
		28630	12.1	7.4
		26984	14.11	7.0
		29967	10.1	5.6

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		29967	10.1	5.6

Supplemental Table 2. At 3, 7 and 14 days after SIV challenge, chemokine, cytokine and regulatory molecule mRNA levels in tissues of the unimmunized RM (SIV) compared to those of age and gender-matched normal RM (Normal).

gene	tissue	day 3				day 7				day 14			
		median Δ CT		modulation	P	median Δ CT		modulation	P	median Δ CT		modulation	P
		Normal	SIV			Normal	SIV			Normal	SIV		
FOXP3	vagina	1.77	2.05		0.795	1.77	2.13		0.345	1.77	3.01	↓	0.008
granzyme	axillary LN	5.04	2.82		0.095	5.04	3.54		0.388	5.04	2.05	↑	0.012
	colon	6.75	3.8	↑	0.024	6.75	4.98		0.05	6.75	4.29	↑	0.005
	mesenteric LN	5.24	3.77		0.143	5.24	4.2		0.298	5.24	2.1	↑	0.012
IFN α	colon	14.75	15.53		0.262	14.75	14.81		0.68	14.75	12.15	↑	0.018
	vagina	15.79	15.57		0.393	15.79	15.78		0.35	15.79	14.36	↑	0.002
IFN γ	axillary LN	11.18	11.86		0.571	11.18	10.15		0.24	11.18	7.79	↑	0.002
	cervix	16.88	17.2		0.393	16.88	13.38	↑	0.002	16.88	11.85	↑	0.002
	colon	16.56	13.88	↑	0.036	16.56	13.44	↑	0.004	16.56	11.64	↑	0.002
	mesenteric LN	12.48	11.04		0.143	12.48	9.72	↑	0.002	12.48	8.94	↑	0.007
	vagina	16.74	14.52	↑	0.036	16.74	13.06	↑	0.004	16.74	12.48	↑	0.004
IL 10	cervix	13.93	14.47		0.571	13.93	14.41		0.24	13.93	11.41	↑	0.002
	mesenteric LN	10.19	9.93		0.548	10.19	9.19	↑	0.013	10.19	8.29	↑	0.002
	vagina	14.93	13.86		0.25	14.93	14.83		0.797	14.93	12.97	↑	0.002
IL 12	iliac LN	9.82	11.1		0.548	9.82	11.57		0.14	9.82	13.12	↓	0.002
	obturator LN	10.23	11.15		0.262	10.23	11.66		0.145	10.23	12.42	↓	0.003
IL 17	obturator LN	14.64	18.74	↓	0.024	14.64	18.01	↓	0.011	14.64	18.7	↓	0.002
IL 2	axillary LN	11.02	11.42		0.364	11.02	12.28	↓	0.012	11.02	14.19	↓	0.002
	obturator LN	9.72	11.68	↓	0.024	9.72	11.27	↓	0.008	9.72	13.59	↓	0.002
IL 23	axillary LN	9.55	10.37		0.905	9.55	10.48		0.113	9.55	12.66	↓	0.008
	obturator LN	9.43	10.63		0.167	9.43	10.33		0.181	9.43	11.88	↓	0.012
IL 29	axillary LN	25	22.38		0.418	25	17.42	↑	0.036	25	15.15	↑	0.002
	cervix	25	25		0.377	25	21.05	↑	0.024	25	17.77	↑	0.002
	colon	25	21.75		0.123	25	20.24	↑	0.014	25	17.87	↑	0.006
	iliac LN	25	20.68	↑	0.017	25	16.97	↑	0.007	25	16.06	↑	0.003
	obturator LN	22.28	21.92		0.897	22.28	20.03		0.168	22.28	14.63	↑	0.002
	vagina	23.7	25		0.22	23.7	22.12		0.096	23.7	16.72	↑	0.008
IL 4	axillary LN	12.47	14.52	↓	0.028	12.47	14.39	↓	0.004	12.47	15.87	↓	0.002
	iliac LN	12.23	15.8	↓	0.024	12.23	13.54	↓	0.034	12.23	15.05	↓	0.003
	mesenteric LN	11.61	12.75	↓	0.036	11.61	12.28		0.161	11.61	13.33	↓	0.002
	obturator LN	12.54	15.81	↓	0.024	12.54	13.56	↓	0.012	12.54	15.08	↓	0.002
IL 6	vagina	14.04	13.3		0.629	14.04	14.36		0.825	14.04	12.03	↑	0.007
IL 8	mesenteric LN	15.71	15.31		0.714	15.71	16.31		0.662	15.71	18.19	↓	0.018
	obturator LN	13.89	18.16	↓	0.036	13.89	16.33	↓	0.029	13.89	18.38	↓	0.002
IP 10	axillary LN	16.55	17.56		0.154	16.55	16.43		0.953	16.55	13.77	↑	0.006
	cervix	19.93	23	↓	0.032	19.93	20.5		0.423	19.93	16.12	↑	0.002

gene	tissue	day 3				day 7				day 14			
		median Δ CT		modu- lation	P	median Δ CT		modu- lation	P	median Δ CT		modu- lation	P
		Normal	SIV			Normal	SIV			Normal	SIV		
IP 10	colon	21.09	19.14		0.629	21.09	19.06		0.148	21.09	17.61	↑	0.003
	iliac LN	16.59	17.05		0.714	16.59	16.38		0.388	16.59	12.55	↑	0.018
	vagina	19.55	20.79		0.381	19.55	19.65		0.409	19.55	15.35	↑	0.008
IRF 7	axillary LN	8.73	7.13		0.095	8.73	5.96	↑	0.036	8.73	4.37	↑	0.005
	cervix	9.72	10.04		0.897	9.72	7.58		0.111	9.72	6.2	↑	0.002
	iliac LN	7.8	7.24		0.099	7.8	4.92	↑	0.016	7.8	4.79	↑	0.002
	vagina	9.45	10.62	↓	0.024	9.45	9.21		0.328	9.45	6.14	↑	0.002
LARC	iliac LN	4.83	5.99		0.571	4.83	7.74	↓	0.019	4.83	7.47	↓	0.007
MDA 5	cervix	9.07	10.92	↓	0.024	9.07	7.48	↑	0.003	9.07	5.92	↑	0.005
	colon	9.05	10.09		0.548	9.05	7.7	↑	0.002	9.05	5.36	↑	0.002
	iliac LN	7.12	7.49		0.167	7.12	6.04	↑	0.036	7.12	4.44	↑	0.003
	mesenteric LN	7.46	6.47		0.167	7.46	5.86	↑	0.012	7.46	4.14	↑	0.003
	vagina	8.73	8.52		0.262	8.73	7.7	↑	0.026	8.73	5.46	↑	0.011
MIG	axillary LN	5.93	6.86	↓	0.048	5.93	6.22		0.479	5.93	3.49	↑	0.005
	mesenteric LN	7.07	6.35		0.905	7.07	5.83		0.181	7.07	4.05	↑	0.012
	vagina	9.56	10.4		0.381	9.56	10.9		0.113	9.56	7.19	↑	0.018
MIP 1 β	iliac LN	3.32	5.02	↓	0.024	3.32	4.62	↓	0.008	3.32	4.8	↓	0.008
Mx	axillary LN	6.85	4.23	↑	0.048	6.85	1.73	↑	0.002	6.85	-0.23	↑	0.002
	cervix	5.2	4.34		0.262	5.2	1.69	↑	0.026	5.2	0.87	↑	0.002
	colon	6.91	6.63		0.548	6.91	3.87	↑	0.026	6.91	0.87	↑	0.002
	mesenteric LN	4.93	5.14		0.714	4.93	1.57	↑	0.018	4.93	-0.6	↑	0.012
	obturator LN	4.89	4.78		1	4.89	-0.19		0.112	4.89	0.34	↑	0.012
	vagina	4.83	5.28		0.099	4.83	3.95		0.438	4.83	0.64	↑	0.002
OAS	axillary LN	10.02	8.79		0.143	10.02	7.17	↑	0.007	10.02	5.33	↑	0.007
	cervix	9.04	9.16		0.393	9.04	8.23		0.364	9.04	6.2	↑	0.004
	colon	7.14	6.97		0.437	7.14	5.28		0.05	7.14	4.7	↑	0.002
	mesenteric LN	8.57	8.89		0.653	8.57	7.11	↑	0.042	8.57	4.41	↑	0.012
	vagina	8.57	8.69		0.786	8.57	8.63		0.797	8.57	5.89	↑	0.012
perforin	axillary LN	9.01	4.19		0.167	9.01	4.37		0.157	9.01	3.84	↑	0.011
	colon	8.63	7.29	↑	0.024	8.63	8.43		0.388	8.63	6.74	↑	0.004
	mesenteric LN	5.13	4.97		0.604	5.13	4.76		0.181	5.13	3.87	↑	0.002
	vagina	7.44	5.97	↑	0.036	7.44	7.08		0.147	7.44	5.93	↑	0.004
RIG 1	colon	9.24	11.31		0.548	9.24	7.84	↑	0.007	9.24	4.6	↑	0.002
	iliac LN	6.95	8.06		0.095	6.95	6		0.216	6.95	3.77	↑	0.018
	mesenteric LN	7.42	7.13		0.381	7.42	6.13	↑	0.003	7.42	3.7	↑	0.005
	vagina	8.51	7.69		0.095	8.37	6.89	↑	0.003	8.37	5.11	↑	0.016
siglec 3	axillary LN	7.34	7.74		0.517	7.34	7.87		0.86	7.34	8.95	↑	0.016
	cervix	13.58	13.38		0.786	13.58	11.46		0.147	13.58	10.79	↑	0.007
	vagina	14.79	12.79	↑	0.048	14.79	13.87		0.181	14.79	13.22	↑	0.012
siglec 5	cervix	11.27	11.45		0.786	11.27	9.66	↑	0.029	11.27	7.97	↑	0.002
	colon	10.55	8.96		0.548	10.55	9.49		0.224	10.55	8.84	↑	0.012

gene	tissue	day 3				day 7				day 14			
		median Δ CT		modu- lation	P	median Δ CT		modu- lation	P	median Δ CT		modu- lation	P
		Normal	SIV			Normal	SIV			Normal	SIV		
siglec 5	iliac LN	16.72	6.64	↑	0.048	9.28	6.5	↑	0.012	9.28	7.43	↑	0.005
	mesenteric LN	8.18	6.75		0.381	8.18	6.86		0.066	8.18	6.15	↑	0.012
	vagina	11.37	10.07	↑	0.024	11.37	10.52	↑	0.05	11.37	9.37	↑	0.002
TGF β	axillary LN	6.78	3.77		0.057	6.78	4.02	↑	0.034	6.78	4.16	↑	0.003
	cervix	5.37	4.51		0.25	5.37	4.88		0.147	5.37	5.05	↑	0.009
TRIM 5 α	colon	9.23	9.69		0.697	9.23	7.9	↑	0.039	9.23	6.74	↑	0.016
	mesenteric LN	7.61	6.58		0.262	7.61	5.65	↑	0.002	7.61	5.33	↑	0.003
	vagina	9.08	7.39	↑	0.024	9.08	7.16	↑	0.003	9.08	6.61	↑	0.008
VISA	vagina	9.91	9.09		0.095	9.91	9.59		0.315	9.91	9.22	↑	0.012