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Supplementary Materials for

Broadly neutralizing antibodies targeting the HIV-1 envelope V2 apex confer protection against a clade C SHIV challenge

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Supplementary Materials

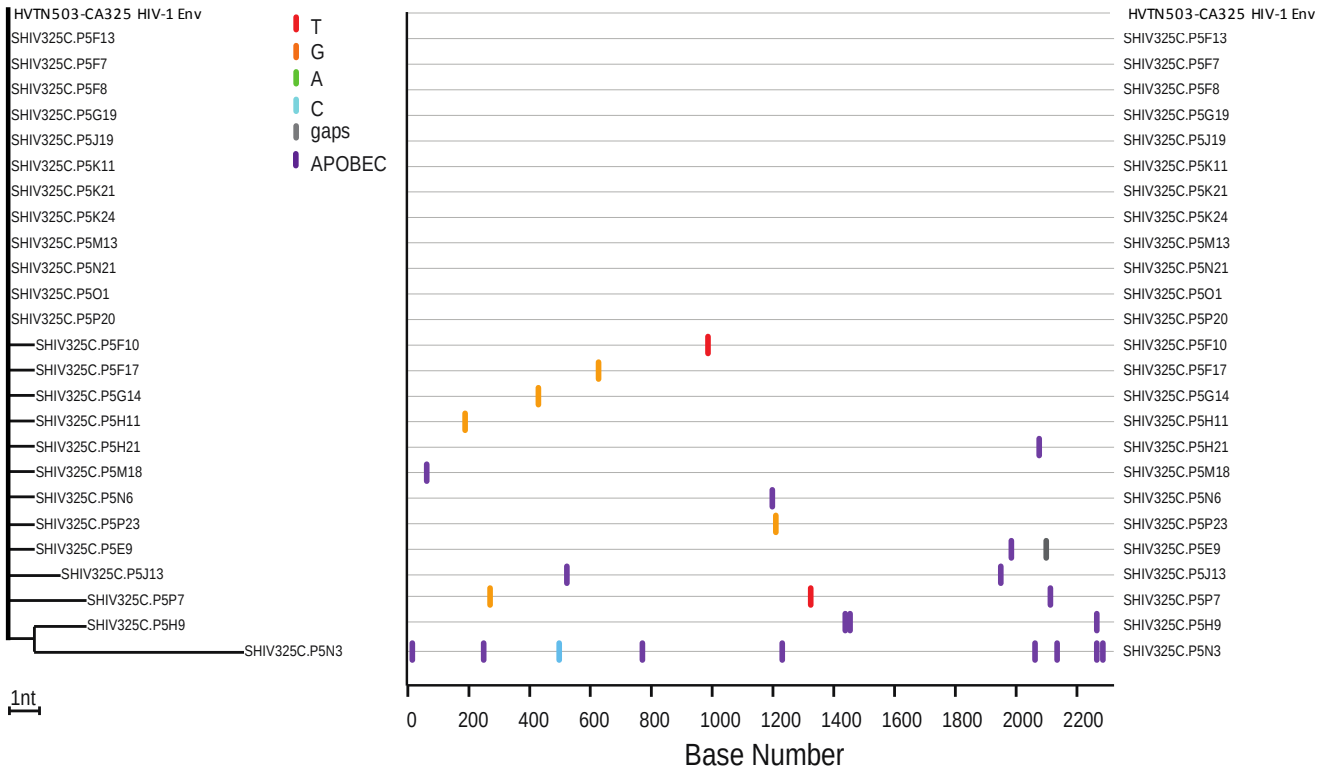

Fig. S1. Highlighter amino acid sequence alignment of *env* derived from the SHIV-325c stock and the parental HIV-1 *env*. Amino acid substitutions that differ from the parental HIV-1 CA325 *env* sequence are indicated in color. Dashes indicate amino acid sequences identical to the parental sequence. A total of 25 sequences from SHIV-325c were generated by SGA.

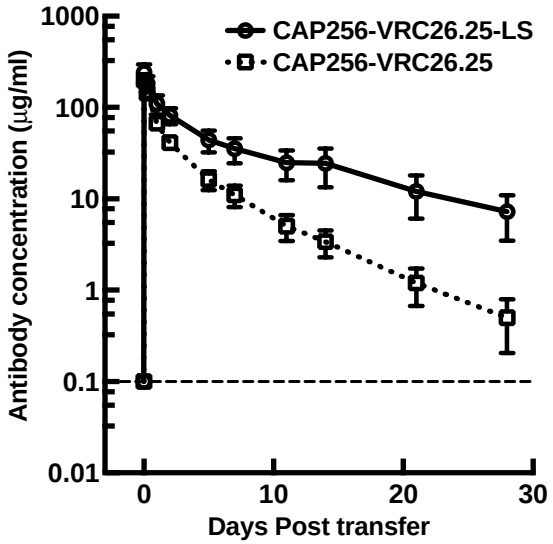

Fig. S2. Serum concentration of CAP256-VRC26.25-LS and CAP256-VRC26.25 in naïve, uninfected rhesus macaques. A single intravenous infusion of 10 mg/kg of either mAb was given on day 0. The elimination half-life for CAP256-VRC26.25-LS was 8.8 days and for CAP256-VRC26.25 was 4.4 days. The dashed line represents the assay limit of detection.

Table S1. IC_{80} (µg/ml) values of PGDM1400 and CAP256-VRC26.25 against SHIV-325c and a multiclade panel of 208 HIV-1 pseudoviruses.

Pseudovirus/SHIV-325c	*PGDM1400 IC80 (ug/ml)*	*CAP256-VRC26.25-LS IC80 (ug/ml)*
286.36	0.046	0.004
288.38	9.87	>50
3988.25	0.1	0.11
5768.04	0.2	>50
6101.1	>50	>50
6535.3	>50	>50
7165.18	4.88	>50
0013095-2.11	0.015	>50
001428-2.42	0.018	>50
0077_V1.C16	0.007	0.023
00836-2.5	0.2	>50
0260.v5.c36	0.014	>50
0330.v4.c3	0.015	1.04
0439.v5.c1	>50	>50
0815.V3.C3	>50	>50
0921.V2.C14	0.014	0.002
16055-2.3	0.007	0.005
16845-2.22	>50	>50
16936-2.21	>50	0.065
191821.E6.1	>50	0.091
231965.c1	3	>50
235-47	0.043	2.55
242-14	0.033	0.005
246-F3.C10.2	0.022	1.77
247-23	0.02	0.005
25710-2.43	0.015	0.004
25711-2.4	3.31	>50
25925-2.22	0.011	0.0009
26191-2.48	>50	0.003
263-8	0.088	0.27
269-12	4.33	0.182
271-11	0.081	>50
3016.v5.c45	>50	0.005
3168.V4.C10	0.>502	>50
3301.V1.C24	0.075	0.02
3326.V4.C3	0.012	0.0003
3337.V2.C6	>50	0.001
3365.v2.c20	0.04	>50

3415.v1.c1	0.395	>50
3468.V1.C12	>50	>50
3589.V1.C4	>50	>50
3637.V5.C3	>50	>50
3718.v3.c11	0.014	>50
3817.v2.c59	>50	>50
3873.V1.C24	0.026	0.02
398-F1_F6_20	>50	>50
426c	>50	>50
45_01dG5	0.124	0.272
57128.vrc15	0.4	2
6095.V1.C10	0.062	0.005
620345.c1	>50	0.051
6322.V4.C1	0.036	0.012
6405.v4.c34	>50	>50
6471.V1.C16	>50	>50
6540.v4.c1	0.022	0.051
6545.V4.C1	0.026	0.096
6631.V3.C10	>50	>50
6644.V2.C33	>50	>50
6785.V5.C14	0.059	0.006
6838.V1.C35	0.08	0.042
89.6.DG	>50	>50
928-28	0.2	0.041
96ZM651.02	0.652	>50
A03349M1.vrc4a	0.272	0.12
A07412M1.vrc12	0.049	0.034
AC10.29	0.09	1
ADA.DG	0.252	>50
Bal.01	>50	>50
BaL.26	39.4	>50
BB201.B42	0.004	0.001
BB539.2B13	0.015	0.031
BG1168.01	>50	>50
BG>505.W6M.C2	0.003	0.012
BI369.9A	0.023	0.004
BJOX002000.03.2	0.012	0.002
BJOX009000.02.4	0.437	>50
BJOX010000.06.2	42.2	>50
BJOX02>5000.01.1	0.09	>50
BJOX028000.10.3	0.243	>50
BL01.DG	>50	>50

BR025.9	0.009	>50
BR07.DG	>50	>50
BS208.B1	0.009	0.0004
BX08.16	0.199	>50
C1080.c3	0.003	0.718
C2101.c1	0.041	>50
C3347.c11	0.015	>50
C4118.09	0.009	0.001
CAAN.A2	>50	>50
CAP210.E8	1.5	0.004
CAP244.D3	>50	>50
CAP256.206.C9	0.014	0.002
CAP45.G3	0.006	0.001
Ce1176.A3	2.53	>50
CE703010217.B6	0.02	5
CH038.12	>50	0.015
CH070.1	0.004	>50
CH117.4	0.004	0.00004
CH119.10	0.295	0.1806
CH181.12	0.002	0.00004
CM244.ec1	0.0008	2.749
CNE10	>50	>50
CNE12	>50	>50
CNE14	>50	>50
CNE15	0.029	>50
CNE19	0.007	0.008
CNE20	0.013	0.109
CNE21	0.005	0.002
CNE3	>50	>50
CNE30	>50	>50
CNE31	0.898	>50
CNE4	>50	>50
CNE40	1.53	0.449
CNE5	0.006	0.024
CNE53	0.089	>50
CNE55	0.03	0.006
CNE56	26	>50
CNE57	>50	>50
CNE58	0.011	0.003
CNE59	0.019	>50
CNE7	0.032	0.024
CNE8	0.013	1

DJ263.8	0.009	0.014
DU123.06	0.02	10
DU151.02	0.004	0.008
DU156.12	0.003	0.051
DU172.17	7.1	>50
DU422.01	>50	0.1093
HO86.8	0.104	>50
HT593.1	1.02	>50
HXB2.DG	>50	>50
JRCSF.JB	0.071	>50
JRFL.JB	>50	>50
KER2008.12	0.012	0.183
KER2018.11	0.012	0.002
KNH1209.18	>50	8.85
M02138	2.02	>50
MB201.A1	0.938	>50
MB539.2B7	0.005	4
MI369.A5	0.042	0.019
MN.3	>50	>50
MS208.A1	0.5	0.232
MW965.26	0.317	0.572
NKU3006.ec1	>50	>50
P0402.c2.11	0.008	0.009
P1981.C5.3	>50	0.022
PVO.04	3.17	0.289
Q168.a2	0.013	>50
Q23.17	0.004	1.2962
Q259.17	10	0.0003
Q461.e2	0.579	0.08
Q769.d22	0.005	>50
Q769.h5	0.002	>50
Q842.d12	0.007	0.123
QH0515.01	>50	>50
QH0692.42	>50	>50
QH209.14M.A2	0.106	>50
R1166.c1	2.5	>50
R2184.c4	0.006	5
R3265.c6	0.015	>50
REJO.67	0.003	>50
RHPA.7	0.877	>50
RW020.2	0.02	>50
SC422.8	3.37	>50

SF162.LS	>50	>50
SHIV 325C.Hu	0.061	0.006
SO18.18	0.009	0.004
SS1196.01	2.06	>50
T2>50-4	0.002	0.002
T251-18	>50	>50
T253-11	0.016	32.5
T255-34	>50	>50
T257-31	0.017	0.002
T266-60	1.24	0.11
T278->50	0.477	>50
T280-5	0.78	>50
T33-7	0.008	>50
TH023.6	0.069	>50
TH966.8	0.016	0.089
TH976.17	>50	8
THRO.18	0.25	>50
TRJO.58	>50	>50
TRO.11	1.97	>50
TV1.29	0.004	>50
TZA125.17	0.316	0.028
TZBD.02	0.042	0.016
UG021.16	>50	>50
UG024.2	>50	>50
UG037.8	0.203	>50
WITO.33	0.002	>50
X1193.c1	0.517	0.6
X1254.c3	>50	>50
X1632.S2.B10	0.005	0.01
X2088.c9	>50	>50
X2131.C1.B5	0.155	0.113
X2278.C2.B1	0.041	0.073
YU2.DG	0.742	>50
ZA012.29	>50	>50
ZM106.9	0.005	0.055
ZM109.4	0.07	0.253
ZM135.10a	>50	>50
ZM176.66	0.007	0.001
ZM197.7	0.17	0.033
ZM214.15	>50	0.231
ZM215.8	0.011	>50
ZM233.6	0.004	0.002

ZM249.1	2.5	0.021
ZM53.12	0.019	0.0009
ZM55.28a	0.106	0.048

Table S2. Neutralization of JR-CSF alanine variants by PGDM1400 or PG9. A panel of HIV_{JRCSF} Env pseudovirus alanine scanning mutants was developed to examine the neutralization potency of PGDM1400 compared with PG9.

JR-CSF	IC_{50} (μg/mL)	
	PGDM1400	**PG9**
WT	0.003	0.003
V127A	0.009	0.005
N134A	0.032	0.001
N160K	>50	>50
T162A	>50	>50
I165A	0.003	0.001
R166A	0.073	0.004
D167A	>50	0.001
K168A	0.002	0.002
E172A	0.001	0.001
Y173A	0.002	0.002
Y177A	0.019	0.006
L179A	0.002	0.001

Table S3. Primary data for Fig. 1 and fig. S2.

A

Weeks	Animal							
	5544	5552	5545	5549	5333	5564	5550	5561
1	2.20	2.61	2.20	2.20	2.20	2.20	2.20	2.20
2	2.20	5.44	3.24	3.42	2.20	3.36	6.39	3.00
3	5.15	4.89	5.30	4.70	5.18	4.64	4.52	4.69
4	4.92	5.13	3.23	4.43	6.67	4.80	3.49	6.11
5		5.95			4.94		3.80	5.15
6	6.52	4.91	2.64	3.16	3.78	5.69	4.30	5.40
7	6.00	4.52	4.55	3.11	3.81	4.31	3.40	5.17
8	5.59	4.33	3.16	3.36	3.61	4.20	3.47	4.14
9	5.64		3.24	3.76	4.44	4.39		3.25
10	5.27		3.33	3.05	3.30	3.82		3.65
11	5.23		2.20	2.20		3.38		
12	5.17	4.19	3.71	2.20		4.20	3.41	
13	5.04		2.20	3.26		4.32		
14	5.17		2.20	2.20	3.56	4.00		4.24

B

Animal	CD4+ T-cells/mm^3	
	pre-infection	post-infection nadir
5544	1685	1540
5545	1281	1152
5549	513	577
5564	1194	1032
5550	1531	1000
5552	1949	1089
5561	1435	993
5333	1658	832

C

Days	Animals							
	CAP256-VRC26.25-LS				CAP256-VRC26.25			
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.02	161.8	287.4	251.5	263.1	199.9	211	180.5	196.5
0.25	133.9	211.2	174.9	211.4	144.1	139.7	130.2	161.6
1	79.8	131.5	95.7	130.9	71.2	66.9	58.7	71.2
2	63.5	86.1	75.8	101.5	45.1	38.7	43	37.9
5	30.2	51.1	38.3	56.2	21.3	12.3	15.1	16.1
7	23.8	44.2	28.4	44.8	14.8	8.2	9.4	11.6
11	15.5	28.8	19.8	35.1	6.7	3	4.7	5.7
14	12.5	26.3		34.3	4.7	2.1	3	3.8
21	6.2	14.9	8	19	1.4	0.6		1.6
28	3.7	8.5	4.8	11.9	0.7	0.3	0.2	0.8