

Table S1: Abundance of oligomannose-type glycans for each CAP256 gp120. A breakdown of the distribution of structures within the oligomannose series (Man₅₋₉GlcNAc₂) are also reported. We have previously shown a coefficient of variance of 1.5 (mean 36.7, SD 0.6) for the assessment of the oligomannose series on gp120_{BaL} expressed and analysed 5 times in parallel (Pritchard et al, Nat. Commun, 2015, 6:7479). Therefore a 4% variation in Man₅₋₉GlcNAc₂ would represent ~6.6 SDs away from the mean and is therefore noteworthy. Percentage change in Man₅₋₉GlcNAc₂ and Man₉GlcNAc₂ compared to the SU virus for each CAP256 gp120 clone studied are calculated using the formula: % change = ((%CAP-%SU)/%SU)*100).

Virus sequence	Time after infection (Weeks)	OD PNGSs	gp160 PNGSs	gp120 PNGSs	M5	M6	M7	M8	M9	Total (M5-M9)	% change in M9 compared to 15wks_SU	% change in M5-M9 compared to 15wks_SU
6wks PI	6	13	27	23	10.6	4.3	6.8	8.7	4.9	35.3	-46.2	-3.0
15wks SU	15	14	29	25	6.9	3.6	6.9	9.9	9.1	36.4	0.0	0.0
23wks.14	23	14	29	25	9.6	4.3	9.1	11.2	5.6	39.7	-38.5	9.1
23wks.13	23	15	30	26	8.7	3.7	8.3	12.9	12.4	46.0	36.3	26.4
30wks.2	30	14	29	25	6.5	3.0	5.4	10.4	8.4	33.7	-7.7	-7.3
34wks.22	34	14	27	23	9.1	5.0	10.1	13.4	5.3	42.9	-41.8	17.9
34wks.31	34	14	28	24	4.9	3.6	4.9	9.0	6.9	29.3	-24.1	-19.6
38wks.16	38	14	28	24	9.1	6.5	9.4	11.4	3.1	39.5	-65.9	8.5
38wks.19	38	14	29	25	8.1	4.0	7.9	12.5	5.7	38.1	-37.4	4.7
38wks.38	38	14	29	25	3.6	4.1	7.7	11.6	5.6	32.7	-38.5	-10.2
48wks.8	48	14	29	25	8.1	4.1	8.2	13.4	7.9	41.7	-13.2	14.6
48wks.10	48	14	28	24	8.2	3.1	7.0	8.3	8.8	35.5	-3.3	-2.5
48wks.17	48	15	28	24	8.7	4.1	7.7	12.7	10.7	43.8	17.6	20.3
48wks.18	48	15	30	26	4.9	6.2	9.5	14.4	7.0	42.0	-23.1	15.4
59wks.2a	59	15	30	26	8.9	4.0	7.7	9.9	9.9	40.4	8.8	11.0
59wks.4a	59	15	31	27	6.2	4.6	6.3	12.2	18.2	47.6	100.0	30.7
59wks.10b	59	15	30	26	5.8	3.9	6.0	12.0	16.4	44.0	79.9	20.9
94wks.A3	94	15	32	28	7.4	3.1	5.9	13.2	15.3	44.9	68.1	23.4
94wks.F4	94	15	30	26	5.3	4.2	6.0	13.4	15.7	44.7	73.0	22.7
176wks.C2	176	14	28	24	6.3	13.3	10.5	6.6	4.3	41.2	-52.7	13.2
176wks.H1	176	13	30	26	4.6	2.6	6.7	14.1	7.3	35.1	-19.8	-3.6
176wks.F1	176	13	28	24	5.6	3.1	6.4	11.7	6.5	33.3	-28.6	-8.5
176wks.4	176	14	31	27	1.8	7.8	10.9	10.4	7.1	38.2	-22.0	4.9
176wks.10	176	15	31	27	5.9	4.5	6.0	11.6	17.3	45.3	90.1	24.4

Table S2: Abundance of oligomannose-type glycans for a cross-clade panel of gp120s. A breakdown of the distribution of structures within the oligomannose series (Man₅₋₉GlcNAc₂) are also reported in addition to the total PNGSs on gp120 and on the outer domain. Gp120s are grouped together according to their clade. Transmitter/founder viruses are labeled T/F.

	Clade	M5	M6	M7	M8	M9	Total	Total PNGSs	OD PNGSs
0260.V5.C36 191084 B7.19 Q23-17 BG505 94UG103 92RW020 Q842	A	6.7	5.8	5.7	9.5	14.3	42.0	27	16
	A (T/F)	5.5	6.8	9.9	11.7	7.9	41.7	25	14
	A	9.1	7.2	7.1	9.4	5.4	38.3	23	15
	A	7.4	5.5	8.7	11.8	9.7	43.1	24	15
	A	8.0	7.4	8.2	8.9	14.2	46.7	27	16
	A	4.1	4.6	7.5	11.2	7.7	35.1	25	16
	A	5.6	5.7	6.7	6.2	2.3	26.6	23	15
BaL JRCSF HXB2 SF162 TRJO_A2 1056_TA11_1826 1012_11_TC21 JRFL	B	2.5	3.1	6.2	10.7	11.6	34.1	23	14
	B	2.8	3.7	6.6	7.8	8.5	29.4	23	14
	B	5.5	4.7	8.2	12.0	10.3	40.7	24	14
	B	5.7	4.2	7.9	13.6	12.8	44.2	21	14
	B	8.2	6.2	7.9	11.9	6.6	40.8	27	15
	B (T/F)	5.4	5.7	7.4	9.1	8.0	35.4	25	15
	B (T/F)	5.5	5.5	8.5	11.8	9.9	41.2	28	15
B	5.4	6.3	6.9	11.3	12.1	42.0	23	14	
96ZM651 Du156 ZM247v1(Rev-) ZM214M_SGA_A3 IAVI C22 Ce7084	C	4.8	5.5	7.6	6.6	4.5	29.0	27	12
	C	6.7	6.0	7.1	9.1	8.0	37.0	24	14
	C	9.2	6.9	6.7	11.7	14.9	49.3	27	16
	C	4.3	4.2	5.4	7.2	2.7	23.8	23	12
	C	5.8	5.7	10.3	11.4	5.9	39.2	24	15
	C (T/F)	9.4	7.9	7.7	6.8	2.9	34.7	27	14
C1080.B2 92TH021 BJOX015000.11.5 C3347	AE	6.1	5.5	7.7	14.5	12.4	46.2	23	14
	AE	7.3	6.3	8.5	11.6	8.5	42.1	24	14
	AE (T/F)	7.8	6.2	7.3	10.3	5.8	37.3	25	14
	AE	5.4	4.8	6.6	10.0	6.1	32.8	24	13
P0402_c2_11 X1193_c1 X1254_3 X2088	G	10.6	8.8	9.3	11.6	6.0	46.3	27	16
	G	7.2	7.4	9.3	15.0	11.7	50.5	27	15
	G	5.3	5.1	6.9	10.1	5.7	33.0	25	14
	G	7.0	7.3	7.4	7.7	4.4	33.7	27	17
		M5	M6	M7	M8	M9	TOTAL	Total PNGS	OD PNGSs
	A	6.6	6.1	7.7	9.8	8.8	39.1	24.9	15.3
	B	5.1	4.9	7.5	11.0	10.0	38.5	24.3	14.4
	C	6.7	6.0	7.5	8.8	6.5	35.5	25.3	13.8
	AE	6.6	5.7	7.5	11.6	8.2	39.6	24.0	13.8
	G	7.5	7.2	8.2	11.1	7.0	40.9	26.5	15.5

Table S3: Potency of neutralization for a panel of HIV bnAb against the CAP256 pseudoviruses. Values are reported as IC₅₀ in µg/mL and colour coded according to the key.

Virus sequence	Time after infection (Weeks)	VRC01	PGV04	J3	PGT121	PGT128	PGT135	PGT151	PG9	CAP256-VRC26.06	CAP256-VRC26.27	CAP256-VRC26.25	CAP256-VRC26.11
6wks.PI	6	0.050	0.056	0.307	0.047	0.028	0.202	0.004	>10	0.03	>50	1	>50
15wks.SU	15	0.338	0.529	0.082	0.010	0.009	>20	>5	0.012	0.063	0.001	0.001	0.014
23wks.14	23	0.410	0.500	0.028	0.004	0.035	>20	>5	>10	0.11	>50	>50	>50
23wks.13	23	0.246	1.671	0.037	0.019	0.066	>20	>5	>10	0.086	>50	>50	>50
30wks.2	30	0.648	0.453	0.040	0.019	0.015	>20	>5	>10	0.006	>50	>50	11.3
34wks.22	34	0.600	0.790	0.027	0.005	0.021	>20	>5	>10	0.02	1.58	10	>50
34wks.31	34	0.529	1.268	0.065	0.004	0.002	>20	>5	0.051	0.2	0.010	0.001	0.04
38wks.16	38	0.815	0.770	0.046	0.017	0.052	>20	>5	>10	0.6	>50	>50	24
38wks.19	38	0.192	0.974	0.061	0.026	0.049	>20	0.021	>10	0.18	>50	>50	>50
38wks.38	38	0.265	0.945	0.080	0.045	>1	>20	0.009	>10	0.19	20.9	5	>50
48wks.8	48	0.634	0.910	0.190	0.005	0.046	>20	0.005	0.102	0.24	0.020	0.02	0.49
48wks.10	48	0.420	0.320	0.100	0.003	0.006	>20	0.005	0.378	>50	0.020	0.02	0.27
48wks.17	48	0.669	2.447	0.081	0.016	0.009	>20	>5	>10	>50	>50	>50	>50
48wks.18	48	4.483	1.711	0.242	0.015	0.005	>20	0.015	0.184	1.1	3.98	0.02	0.24
59wks.2a	59	0.549	0.468	0.079	0.044	0.011	>20	0.015	>10	8.9	>50	>50	1.7
59wks.4a	59	0.332	0.684	0.089	0.027	0.029	>20	>5	0.660	>50	>50	>50	>50
59wks.10b	59	0.764	0.501	0.033	0.009	0.011	>20	0.020	0.169	0.2	0.020	0.02	0.54
94wks.A3	94	0.311	0.519	0.041	0.033	0.016	0.029	0.005	1.49	>50	>50	>50	>50
94wks.F4	94	0.521	0.688	0.044	0.026	0.047	0.009	0.008	2.16	>50	>50	>50	>50
176wks.C2	176	0.106	0.088	0.061	0.055	>1	>20	0.002	>10	>50	>50	>50	>50
176wks.H1	176	0.161	0.255	0.105	>5	>1	>20	0.004	1.45	>50	>50	>50	>50
176wks.F1	176	0.065	0.170	0.024	0.217	>1	>20	0.002	>10	>50	>50	>50	>50
176wks.4	176	0.599	3.083	0.080	>5	>1	>20	0.009	>10	>50	>50	>50	>50
176wks.10	176	0.546	0.425	0.061	0.204	0.010	>20	0.008	>10	>50	>50	>50	>50

IC ₅₀ (ug/mL)
<0.01
0.01-0.1
>0.1-1
>1