Table S1. Infection details, clinical parameters and neutralizing antibody responses in rhesus macaques

Animal ID	Inoculum	Env Subtype	Route	Depletion of $CD8^+$ cells	Weeks of Followup	VL Peak (copies/ml)	VL Setpoint (copies/ml)	Clinical AIDS	Peak autologous NAb Titer	bNAb Induction	bNAb Specificities
RM6069	SHIV CH505	C	IV	Yes*	40	19,400,000	988,110	Yes	1396	No	
RM6070	SHIV CH505	C	IV	Yes*	36	62,600,000	736,483	Yes	7837	Yes	V2 Apex
RM6072	SHIV CH505	C	IV	Yes*	184	15,700,000	20,405	No	3544	No	
RM6697	SHIV CH505	C	IV	No	112	812,436	1,638	No	918	No	
RM6698	SHIV CH505	C	IV	No	112	943,718	526	No	277	No	
RM6699	SHIV CH505	C	IV	No	112	1,155,342	506	No	422	No	
RM6701	SHIV CH505	C	IV	No	112	302,350	<250	No	<20	No	
RM6702	SHIV CH505	C	IV	No	96	1,007,432	<250	No	514	No	
RM6703	SHIV CH505	C	IV	No	112	5,257,396	2,546	No	787	No	
RM5695	SHIV CH505#	C	IV	No	65	4,791,344	12,110	Yes	573	Yes	V2 Apex
RM6163	SHIV CH848	C	IV	Yes*	176	24,870,060	38,409	No	544	Yes	V3 glycan
RM6167	SHIV CH848	C	IV	Yes*	136	116,025,900	117,295	Yes	558	Yes	V3 glycan
RM6700	SHIV CH848	C	IV	No	112	1,271,384	13,760	No	418	No	
RM6713	SHIV CH848	C	IV	No	89	17,682,010	45,008	Yes	732	No	
RM6714	SHIV CH848	C	IV	No	112	832,110	15,114	No	655	No	
RM6720	SHIV CH848	C	IV	No	112	1,323,796	<250	No	187	No	
RM40591	SHIV CAP256SU	C	IV	No	129	2,540,090	24,676	No	3067	Yes	V2 Apex
RM42056	SHIV CAP256SU	C	IV	Yes^	88	55,885,850	8,130	No	347	Yes	V2 Apex
RM6727	SHIV CAP256SU	C	IV	Yes^	60	5,282,264	67,392	Yes	665	Yes	Unknown
RM43037	SHIV CAP256SU	C	IV	Yes^	88	11,662,030	10,280	No	492	No	
RM40547	SHIV CAP256SU	C	IV	No	88	825,090	<250	No	<20	No	
RM40624	SHIV CAP256SU	C	IV	No	88	670,330	<250	No	<20	No	

 # Plasma from RMs 6069 (wk10 & wk20), 6070 (wk10 & wk20), 6072 (wk4, wk10 & wk20)

*** Anti-CD8α antibody (MT807R1, NHP Reagent Resource), 50 mg/kg by slow intravenous push administered on day 0 with respect to SHIV inoculation.**

^ Anti-CD8β antibody (CD8beta255R1, NHP Reagent Resource), 25mg/kg by slow intravenous push administered on day -7 with respect to SHIV inoculation.

Table S2. Autologous and heterologous neutralization by plasma from SHIV infected rhesus macaques

	Animal ID	Wpi*	MLV#	Tier 1A MN.3 B	Tier 1A MW965.26 C	Tier 1A TH023.6 AE	Tier 2 TRO11 B	Tier 2 25710 C	Tier 2 CNE8 AE	Tier 2 X2278 B	Tier 2 BJOX 010000 AE	Tier 2 X1632 G	Tier 2 Ce 1176 C	Tier 2 246F3 AC	Tier 2 CH119 AE	Tier 2 Ce0217 C	Tier 2 CNE55 AE	Tier 2 Q23 A	Tier 2 T250 A	Tier 2 WITO B	Tier 2 ZM233 C	Tier 2 CAP256 SU C	Tier 2 CH505 C	Tier 2 CH848 C	Tier 2 BG505 332N A
CH505	RM5695	0	<20	<20^	240	68	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		16	<20	231	49,677	20,691	<20	58	<20	<20	<20	27	<20	<20	<20	<20	<20	144	46	<20	45	<20	46	<20	<20
		24	<20	231	36,483	4,462	<20	<20	<20	<20	<20	24	<20	<20	<20	<20	<20	168	36	55	234	32	573	38	28
		32	<20	270	39,573	5,659	<20	<20	<20	<20	<20	26	<20	47	<20	<20	<20	4,507	93	49	110	36	393	43	29
		48	<20	371	54,675	6,028	<20	28	<20	<20	<20	195	<20	140	<20	<20	<20	6,784	1,941	172	123	81	361	30	92
		56	<20	532	49,505	5,342	72	78	179	28	22	465	20	109	<20	26	20	5,051	1,977	138	413	65	421	127	139
	RM6070	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		8	<20	128	1,522	735	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	25	35	<20	<20	108	<20	<20
		16	<20	1,458	25,484	6,472	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	42	28	46	48	<20	2,556	<20	<20
		24	<20	1,882	69,252	10,212	<20	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	182	48	61	73	<20	4,172	<20	<20
		36	<20	1,830	43,403	1,724	<20	20	<20	<20	<20	40	<20	27	<20	<20	<20	3,003	59	<20	65	<20	2,178	21	<20
	RM6072	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		88	<20	189	30,220	3,118	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	747	<20	<20
		104	<20	145	19,881	3,987	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	256	<20	<20
		144	<20	182	15,718	1,397	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	342	<20	<20
	RM6069	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		40	<20	115	38,037	1,579	<20	<20	<20	<20	<20	24	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	168	<20	<20
	RM6697	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		80	<20	593	14,736	2,226	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	121	150	<20	36	<20	741	<20	<20
		96	<20	622	16,271	4,492	<20	<20	88	<20	<20	<20	<20	<20	<20	<20	<20	128	<20	<20	<20	<20	318	<20	<20
	RM6703	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		64	<20	160	5,373	416	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	493	<20	<20
		80	<20	359	8,865	734	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	787	<20	<20
		88	<20	108	4,677	257	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	221	<20	<20
	RM6698	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		56	<20	294	9,872	930	23	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	61	<20	<20	25	<20	141	<20	<20
		96	<20	109	10,469	632	<20	<20	75	<20	<20	<20	<20	<20	<20	<20	<20	126	<20	<20	<20	<20	246	<20	<20
	RM6699	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		56	<20	491	6,481	1,437	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	24	<20	<20	<20	<20	422	<20	<20
		72	<20	515	9,124	1,156	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	267	<20	<20
		80	<20	433	8,489	1,706	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	26	<20	<20	24	32	261	<20	<20
	RM6701	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		56	<20	277	13,077	1,364	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		72	<20	268	13,068	1,504	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		80	<20	391	23,855	3,172	<20	38	<20	<20	<20	<20	<20	<20	<20	<20	<20	80	<20	<20	44	<20	<20	<20	<20
	RM6702	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		64	<20	2,259	5,924	794	<20	<20	63	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	69	<20	286	<20	<20
		80	<20	2,037	9,183	1,272	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	108	<20	<20	<20	<20	215	<20	<20
CH848	RM6163	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		64	<20	1,481	37,313	406	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	83	<20
		80	<20	1,348	14,057	515	<20	139	<20	<20	<20	<20	101	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	483	<20
		88	<20	1,478	17,819	401	<20	61	152	<20	<20	<20	37	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	834	<20
		104	<20	577	5,555	24	<20	53	<20	<20	<20	<20	25	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	233	<20
		112	<20	372	4,219	111	<20	142	70	25	<20	<20	45	<20	<20	<20	<20	<20	40	<20	34	<20	<20	161	<20
		128	<20	485	7,776	120	<20	1,286	<20	<20	<20	<20	551	<20	<20	<20	<20	<20	28	<20	<20	<20	<20	538	<20
		136	<20	376	6,631	117	<20	334	<20	<20	<20	<20	256	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	561	<20
		144	<20	442	10,529	392	<20	231	373	<20	<20	<20	162	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	339	<20
		152	<20	411	8,787	337	<20	121	79	<20	<20	<20	88	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	413	<20
	RM6167	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		64	<20	21,533	138,427	1,957	<20	44	<20	<20	<20	<20	35	<20	<20	<20	<20	<20	26	<20	32	32	<20	176	<20
		80	<20	25,687	88,417	3,272	97	314	25	38	<20	49	78	<20	44	<20	21	39	215	42	135	153	<20	383	62
		88	<20	13,394	34,686	1,426	38	39	192	<20	<20	37	33	<20	19	<20	<20	57	43	31	86	66	26	313	28
		104	<20	13,110	24,027	29	48	59	<20	24	<20	62	59	51	117	44	22	36	126	23	90	58	21	101	23
		112	<20	6,892	38,256	402	135	97	128	25	<20	35	51	<20	56	25	<20	74	176	<20	93	142	<20	150	23
		128	<20	18,129	64,893	1,238	134	159	<20	39	27	42	84	20	84	21	<20	113	209	25	47	135	<20	74	39
	RM6700	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		40	<20	1,071	39,032	1,299	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	389	<20
		72	<20	1,423	48,567	1,654	<20	52	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	418	<20
		80	<20	1,246	34,941	1,792	<20	47	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	339	<20
		88	<20	1,152	53,591	2,775	<20	73	<20	23	<20	30	<20	<20	<20	<20	<20	<20	<20	<20	25	<20	<20	338	<20
		95	<20	1,016	51,520	1,429	<20	33	<20	<20	<20	84	<20	<20	<20	<20	<20	<20	<20	<20	22	<20	<20	308	<20
	RM6713	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		40	<20	8,375	64,350	1,057	<20	23	<20	<20	<20	<20	<20	<20	<20	<20	<20	35	<20	<20	31	<20	<20	75	<20
		72	<20	6,406	43,159	1,644	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	38	<20	<20	732	<20
		80	<20	7,800	47,081	973	<20	<20	<20	<20	<20	23	<20	<20	<20	<20	<20	<20	<20	<20	31	<20	<20	447	<20
	RM6714	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		40	<20	254	22,447	279	<20	24	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	26	<20	<20	95	<20
		72	<20	111	15,858	245	<20	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	337	<20
		80	<20	109	25,907	509	<20	21	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	174	<20
	RM6720	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		40	<20	1,211	11,203	533	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		72	<20	1,944	19,301	853	<20	<20	42	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	185	<20
		80	<20	2,838	26,695	1,149	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	113	<20
CAP 256 SU	RM40591	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		72	<20	2,167	14,176	977	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	2,230	<20	<20	<20
		88	<20	2,970	31,857	976	<20	<20	30	<20	25	<20	<20	<20	<20	66	<20	<20	<20	<20	32	3,067	<20	<20	<20
		96	<20	3,374	29,806	6,627	<20	22	<20	<20	197	<20	<20	<20	<20	179	<20	<20	<20	<20	207	2,648	<20	<20	<20
		104	<20	5,467	54,915	8,237	20	28	457	45	101	<20	<20	<20	<20	339	<20	119	<20	<20	506	2,344	<20	<20	<20
		112	<20	5,382	59,952	6,798	24	58	31	49	59	36	<20	25	<20	214	<20	318	90	<20	206	1,692	<20	<20	<20
		120	<20	4,045	48,733	3,433	<20	<20	324	31	48	<20	<20	<20	<20	275	28	66	32	<20	154	1,069	<20	<20	<20
		128	<20	7,435	61,501	5,411	<20	<20	608	154	44	<20	<20	<20	<20	138	33	87	<20	<20	209	1,663	<20	<20	<20
	RM42056	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		48	<20	1,083	2,462	65	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	106	<20	<20	123	<20	<20	<20
		56	<20	1,260	6,378	221	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	36	248	<20	20	347	<20	<20	<20
		64	<20	753	2,846	367	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	62	160	<20	24	149	<20	<20	<20
		72	<20	811	3,778	286	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	81	92	<20	26	159	<20	<20	<20
		80	<20	488	2,850	287	<20	<20	<20	<20	<20	20	<20	<20	<20	<20	<20	141	134	<20	37	149	<20	<20	<20
		88	<20	521	2,757	362	<20	<20	<20	<20	<20	21	<20	<20	<20	<20	<20	190	159	<20	42	217	<20	<20	<20
		104	<20	678	2,378	414	34	23	42	<20	21	57	<20	<20	<20	<20	<20	574	115	<20	38	140	<20	<20	<20
	RM6727	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		48	<20	2,471	27,322	642	21	<20	<20	<20	<20	24	<20	<20	<20	<20	<20	<20	27	<20	165	227	<20	<20	<20
		56	<20	1,511	43,630	1,082	26	30	<20	41	<20	<20	<20	<20	<20	<20	<20	<20	111	<20	146	178	<20	<20	<20
		60	<20	736	33,300	2,341	35	57	52	25	<20	53	<20	<20	26	<20	<20	42	74	<20	100	116	<20	<20	<20
	RM43037	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		48	<20	2,242	5,669	510	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	424	<20	<20	<20
		80	<20	925	4,845	555	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	104	<20	<20	<20
		104	<20	2,990	8,711	2,687	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	100	<20	<20	<20
	RM40547	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		88	<20	138	2,282	153	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	RM40624	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
		88	<20	136	1,583	51	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20

* Wpi - weeks post-SHIV infection.

Murine leukemia virus Env-pseudotyped virus; other HIV-1 Envs in this row are listed.

^ Reciprocal plasma neutralization titer (ID50 20-100, green; 100-1000, yellow; 1000-10000, orange; >10000, red).

Bold black rectangular boxes highlight results from seven rhesus macaques with broadly neutralizing antibodies.

Dashed vertical boxes highlight autologous neutralization results.

Table S3. Neutralization breadth of DH650.8 against 118-strain panel

Virus ID	Clade*	Titer (μg/ml)
		DH650.8
		IC50
6535.3	B	>50
QH0692.42	B	>50
SC422661.8	B	>50
PVO.4	B	>50
TRO.11	B	>50
AC10.0.29	B	>50
RHPA4259.7	B	>50
THRO4156.18	B	>50
REJO4541.67	B	>50
TRJO4551.58	B	>50
WITO4160.33	B	>50
CAAN5342.A2	B	>50
WEAU_d15_410_787	B (T/F)	>50
1006_11_C3_1601	B (T/F)	>50
1054_07_TC4_1499	B (T/F)	>50
1056_10_TA11_1826	B (T/F)	>50
1012_11_TC21_3257	B (T/F)	>50
6240_08_TA5_4622	B (T/F)	>50
6244_13_B5_4576	B (T/F)	>50
62357_14_D3_4589	B (T/F)	>50
SC05_8C11_2344	B (T/F)	>50
Du156.12	C	>50
Du172.17	C	>50
Du422.1	C	>50
ZM197M.PB7	C	>50
ZM214M.PL15	C	>50
ZM233M.PB6	C	>50
ZM249M.PL1	C	>50
ZM53M.PB12	C	>50
ZM109F.PB4	C	>50
ZM135M.PL10a	C	>50
CAP45.2.00.G3	C	>50
CAP210.2.00.E8	C	>50
HIV-001428-2.42	C	>50
HIV-0013095-2.11	C	>50
HIV-16055-2.3	C	>50
HIV-16845-2.22	C	>50
Ce1086_B2	C (T/F)	>50
Ce0393_C3	C (T/F)	>50
Ce1176_A3	C (T/F)	>50
Ce2010_F5	C (T/F)	>50
Ce0682_E4	C (T/F)	>50
Ce1172_H1	C (T/F)	>50
Ce2060_G9	C (T/F)	>50
Ce703010054_2A2	C (T/F)	>50
BF1266.431a	C (T/F)	>50
246F C1G	C (T/F)	>50
249M B10	C (T/F)	>50
ZM247v1(Rev-)	C (T/F)	>50
7030102001E5(Rev-)	C (T/F)	>50
1394C9G1(Rev-)	C (T/F)	>50
Ce704809221_1B3	C (T/F)	>50
CNE19	BC	>50
CNE20	BC	>50
CNE21	BC	>50
CNE17	BC	>50
CNE30	BC	>50
CNE52	BC	>50
CNE53	BC	>50
CNE58	BC	>50
MS208.A1	A	>50
Q23.17	A	>50
Q461.e2	A	>50
Q769.d22	A	>50
Q259.d2.17	A	>50
Q842.d12	A	>50
0260.v5.c36	A	>50
3415.v1.c1	A	>50
0330.v4.c3	A	>50
191955_A11	A (T/F)	>50
191084 B7-19	A (T/F)	>50
9004SS_A3_4	A (T/F)	>50
T257-31	CRF02_AG	>50
928-28	CRF02_AG	>50
263-8	CRF02_AG	>50
T250-4	CRF02_AG	>50
T251-18	CRF02_AG	>50
T278-50	CRF02_AG	>50
T255-34	CRF02_AG	>50
211-9	CRF02_AG	>50
235-47	CRF02_AG	>50
620345.c01	CRF01_AE	>50
CNE8	CRF01_AE	>50
C1080.c03	CRF01_AE	>50
R2184.c04	CRF01_AE	>50
R1166.c01	CRF01_AE	>50
R3265.c06	CRF01_AE	Not tested
C2101.c01	CRF01_AE	>50
C3347.c11	CRF01_AE	>50
C4118.c09	CRF01_AE	>50
CNE5	CRF01_AE	>50
BJOX009000.02.4	CRF01_AE	>50
BJOX015000.11.5	CRF01_AE (T/F)	>50
BJOX010000.06.2	CRF01_AE (T/F)	>50
BJOX025000.01.1	CRF01_AE (T/F)	>50
BJOX028000.10.3	CRF01_AE (T/F)	>50
X1193_c1	G	>50
P0402_c2_11	G	>50
X1254_c3	G	>50
X2088_c9	G	>50
X2131_C1_B5	G	>50
P1981_C5_3	G	>50
X1632_S2_B10	G	>50
3016.v5.c45	D	>50
A07412M1.vrc12	D	>50
231965.c01	D	>50
231966.c02	D	>50
3817.v2.c59	CD	>50
6480.v4.c25	CD	>50
6952.v1.c20	CD	>50
6811.v7.c18	CD	>50
89-F1_2_25	CD	>50
3301.v1.c24	AC	>50
6041.v3.c23	AC	>50
6540.v4.c1	AC	>50
6545.v4.c1	AC	>50
0815.v3.c3	ACD	>50
3103.v3.c10	ACD	>50

* (T/F): Transmitted / Founder Virus

Table S4. Diffraction and Refinement Statistics

	DH650 + GP120
PDB ID	6XCJ
Diffraction data	
Space group	$P2_12_12$
Cell dimensions	
Lengths (Å) a, b, c	138.5 122.1 53.4
Angles (°) α, β, γ	90.0 90.0 90.0
d_{min} (Å)	2.80 (2.97-2.80)[a]
R_{merge}[b]	0.13 (1.52)
$CC_{1/2}$	99.7 (64.4)
Avg I/ I	13.99 (1.28)
Completeness (%)	99.8 (99.9)
Average redundancy	5.5 (5.6)
Refinement	
Data range (Å)	49.9-2.80
Reflections	20,060
R/R_{free}[c]	0.23/0.28
RMS deviations	
Bond (Å)	0.008
Angles (°)	1.02
Avg B-factor (Å^2)	
Protein	54.2
Water	33.32
Number of Atoms	
Protein	5,565
Water	21

[a] Values in parentheses are for the outermost shell of data.

[b] $R_{merge} = \sum|I_i - \langle I \rangle| / \sum I_i$, where I_i is the intensity of the i^{th} observation and $\langle I \rangle$ is the mean intensity. Sums are taken over all reflections.

[c] $R = \sum||F_o| - |F_c|| / \sum|F_o|$. R_{free} is calculated for a 5% subset of the data

Table S5. RM5695 personalized Ig germline repertoire

Heavy

IGHV	GenBank Accession*	IGHJ
IGHV1-AAU-U*01		JH-1*01
IGHV1-AAU-U*02		JH-2P*01
IGHV1-ABW-S*01_S9171	MT656172	JH-3*01
IGHV1-AEP*01		JH-4*01
IGHV1-AFS*01		JH-5-1*01_S8786
IGHV1-AGS*02_S4535	MT656173	JH-5-2*01
IGHV1-AGS*02_S6849	MT656174	JH-6*01
IGHV2-ABG-S*01		
IGHV2-ABG-S*02_S2032	MT656175	
IGHV2-ABU-S*01_S6524	MT656176	
IGHV2-AEY-S*01		
IGHV2-AEY-S*01_S8940	MT656177	
IGHV3-AAB*01		
IGHV3-AAB*02		
IGHV3-ABA*01		
IGHV3-ABA*01_S4331	MT656178	
IGHV3-ABJ*01_S1922	MT656179	
IGHV3-ABK*01_S3779	MT656180	
IGHV3-ABY-S*01		
IGHV3-ABY-S*01_S8824	MT656181	
IGHV3-ABY-S*03_S0204	MT656182	
IGHV3-ACA*01		
IGHV3-ACN*01_S7808	MT656183	
IGHV3-ACZ*03		
IGHV3-ADF*01_S4250	MT656184	
IGHV3-ADL-S*01_S4190	MT656185	
IGHV3-ADO*01		
IGHV3-ADR*01		
IGHV3-ADR*03_S0556	MT656186	
IGHV3-ADR*03_S5688	MT656187	
IGHV3-ADX*01_S5510	MT656188	
IGHV3-AEH*01_S5714	MT656189	
IGHV3-AEH*01_S6567	MT656190	
IGHV3-AET*01_S5460	MT656191	
IGHV3-AEW-S*03		
IGHV3-AEW-S*03_S2686	MT656192	
IGHV3-AFC*01_S2394	MT656193	
IGHV3-AFE*01_S4619	MT656194	
IGHV3-AFR*01_S0643	MT656195	
IGHV3-AFW*01_S5271	MT656196	
IGHV3-AFY-S*02		
IGHV3-AFY-S*06		
IGHV3-AGQ-S*02_S3249	MT656197	
IGHV4-ABB-S*01_S0511	MT656198	
IGHV4-ABB-S*01_S8200	MT656199	
IGHV4-ADD*01_S6003	MT656200	
IGHV4-ADD*01_S9501	MT656201	
IGHV4-ADG-U*01_S1296	MT656202	
IGHV4-AEB*01_S7180	MT656203	
IGHV4-AEX-S*01		
IGHV4-AEX-S*01_S0860	MT656204	
IGHV4-AEX-S*01_S4729	MT656205	
IGHV4-AFB-S*01		
IGHV4-AFB-S*01_S8393	MT656206	
IGHV4-AFI*01_S1365	MT656207	
IGHV4-AFL-U*01		
IGHV4-AFQ-U*01		
IGHV4-AFQ-U*01_S2532	MT656208	
IGHV4-AFU-U*01		
IGHV4-AFU-U*01_S9450	MT656209	
IGHV4-AGL*01_S3100	MT656210	
IGHV4-AGR*01		
IGHV4-AGU*01		
IGHV4-AGU*01_S1118	MT656211	
IGHV4-AGU*01_S2780	MT656212	
IGHV5-ABI*01_S2502	MT656213	
IGHV5-ABI*02_S3096	MT656214	
IGHV7-ABS*01_S4281	MT656215	
IGHV7-AGO-S*01		
IGHV7-AGO-S*03_S8272	MT656216	

Lambda

IGLV	GenBank Accession*	IGLJ
IGLV1-ABB*01_S4519	MT656217	JL1*01
IGLV1-ABB*01_S6715	MT656218	JL2*01
IGLV1-ABB*01_S8237	MT656219	JL3*01
IGLV1-ABN*02_S2133	MT656220	JL6*01_S7212
IGLV1-ABN*02_S8168	MT656221	JL7*02
IGLV1-ABS*01_S5111	MT656222	
IGLV1-ACN*02		
IGLV1-ACR*01		
IGLV1-ACV*01_S2830	MT656223	
IGLV1-ACV*01_S4108	MT656224	
IGLV1-ACW*02		
IGLV1-ADA*01		
IGLV1-ADL*01		
IGLV1-ADU*01_S4142	MT656225	
IGLV1-ADU*01_S8066	MT656226	
IGLV2-ABE*01_S2946	MT656227	
IGLV2-ABE*01_S9768	MT656228	
IGLV2-ABI*01_S7244	MT656229	
IGLV2-ABI*01_S8018	MT656230	
IGLV2-ABJ*01_S9052	MT656231	
IGLV2-ABU*01_S3471	MT656232	
IGLV2-ABX*01_S5497	MT656233	
IGLV2-ACE*01_S4286	MT656234	
IGLV2-ACE*01_S7743	MT656235	
IGLV2-ADC*01		
IGLV2-ADC*01_S5785	MT656236	
IGLV2-ADK*01		
IGLV3-AAB*01_S3980	MT656237	
IGLV3-AAB*01_S5697	MT656238	
IGLV3-AAI*01_S0428	MT656239	
IGLV3-AAV*01		
IGLV3-AAV*04		
IGLV3-ACB*01_S7967	MT656240	
IGLV3-ADT*01_S0731	MT656241	
IGLV3-AEB-X*02		
IGLV3-AEB-X*03_S6646	MT656242	
IGLV3-AEC-X*01		
IGLV3-AED-X*01_S4855	MT656243	
IGLV3-AED-X*01_S6916	MT656244	
IGLV3-AED-X*06_S3217	MT656245	
IGLV3-AED-X*06_S4240	MT656246	
IGLV4-ACF*01_S1875	MT656247	
IGLV4-ACF*02		
IGLV5-AAM*01		
IGLV5-AAP*01		
IGLV5-AAP*01_S8201	MT656248	
IGLV5-AAX*01		
IGLV5-ABG*01_S1697	MT656249	
IGLV5-ABL*01		
IGLV5-ABT*01_S4414	MT656250	
IGLV5-ACY*01		
IGLV5-ADQ*01_S3524	MT656251	
IGLV6-AAC*01_S4139	MT656252	
IGLV6-ADD*01_S2475	MT656253	
IGLV6-ADW*01		
IGLV7-AAK*01		
IGLV7-ABO*01		
IGLV7-ADB*01		
IGLV8-ABK*01		
IGLV10-AAO*01		
IGLV11-AAY*01		

***Sequences with GenBank accession numbers represent novel alleles identified by IgDiscover analysis of Ig gene transcripts from IgM+IgD+IgG- B cells from animal RM5695**

Table S6. Cryo-EM Data Collection and Refinement Statistics

	RHA1.V2.01 in complex with HIV-1 Env BG505 DS-SOSIP
EMDB ID	22295
PDB ID	6XRT
Data Collection	
Microscope	FEI Titan Krios
Voltage (kV)	300
Electron dose ($e^-/Å^2$)	71.06
Detector	Gatan K2 Summit
Pixel Size (Å)	1.073
Defocus Range (μm)	-0.1 to -4.1
Magnification	22500
Reconstruction	
Software	cryoSparcV2.12
Particles	21,480
Symmetry	C1
Box size (pix)	288
Resolution (Å) ($FSC_{0.143}$)	3.9
Refinement	
Software	Phenix 1.18
Protein residues	1947
Chimera CC	0.87
EMRinger Score	1.49
R.m.s. deviations	
Bond lengths (Å)	0.005
Bond angles (°)	1.114
Validation	
Molprobity score	1.61
Clash score	4.97
Favored rotamers (%)	99.1
Ramachandran	
Favored regions (%)	95.06
Disallowed regions (%)	0.0