

## Supplementary Data

B. HXB2	RPVSTQLLLNGSLAEEVIRSVNFTD	NAKIIIVQLNTSVEINCRPNNTRKRIRIQRGGRAFVTIG-KIGNMRQAHNCISRAKWNNTLQKIASKLREQFGNNKTIIFKQ	S	SGGDP	ETVTHSFNCGEFFEYCNSTQLFNSTWFSNFWSTEGSNTE	409	
B. JRC5F	.....K.....D.....	.....E.....K.....S.....S.....H.....R.....Y.....T.....E.....I.....D.....I.....Q.....V.....E.....N.....V.....T.....H.....	.....K.....	.....N.....	.....ND.....	.....K.....S.....G.....401	
B. SS196.1	.....E.....L.....T.....I.....	.....K.....V.....S.....H.....Y.....T.....E.....I.....D.....I.....K.....D.....Y.....E.....A.....Q.....I.....E.....R.....A.....N.....R.....	.....A.....	.....A.....	.....T.....N.....NG.....	.....GWSDN.....E.....T.....399	
B. Bal.26	.....E.....N.....I.....V.....	.....S.....H.....Y.....T.....E.....I.....D.....I.....L.....D.....N.....K.....V.....I.....	.....V.....	.....H.....	.....NV.....	.....S.....E.....V.....406	
B. YU2	.....I.....E.....N.....	.....E.....V.....S.....N.....L.....Y.....T.....E.....I.....D.....I.....L.....K.....T.....Q.....E.....E.....I.....K.....	.....NP.....	.....	.....ND.....	.....R.....K.....L.....G.....398	
A. KHH1209	K.....KR.....K.....TE.....I.....N.....N.....	.....FVNP.....S.....H.....Q.....Y.....T.....E.....I.....D.....I.....V.....SS.....K.....Q.....V.....K.....Q.....G.....T.....Y.....K.....	.....V.....NT.....	.....	.....T.....A.....DTSG.....	.....S.....N.....N.....WKES.....ST.....405	
B. MN	.....E.....	.....H.....E.....Q.....V.....Y.....K.....H.....	.....S.....	.....Y.....T.....K.....N.....I.....T.....I.....	.....D.....R.....V.....K.....K.....	.....V.....T.....M.....T.....SP.....	.....NG.....NNTW.....T.....408
C. C54	K.....V.....G.....II.....E.....L.....N.....V.....	.....H.....Q.....V.....G.....S.....	.....	.....Q.....T.....Y.....T.....E.....I.....D.....I.....E.....D.....	.....E.....Q.....R.....V.....S.....K.....A.....H.....Q.....K.....A.....S.....	.....L.....V.....T.....R.....K.....T.....S.....G.....Y.....T.....P.....NGTKS.....SS.....407	
C. SF162	.....G.....E.....	.....K.....E.....S.....T.....	.....	.....Y.....T.....E.....I.....D.....I.....G.....E.....	.....V.....T.....Q.....A.....	.....V.....M.....N.....I.....P.....N.....401	
B. PVO.4	.....R.....I.....E.....N.....	.....KT.....S.....S.....	.....	.....Y.....T.....E.....I.....D.....I.....L.....E.....K.....Y.....S.....T.....	.....NG.....	.....DAN.....GNCT.....CDES.....D.....419	
A. KHH1144	K.....K.....K.....TE.....I.....N.....	.....VEP.....R.....ESV.....	.....	.....Q.....F.....A.....T.....E.....I.....D.....I.....V.....S.....Q.....K.....Q.....V.....E.....Q.....H.....K.....	.....NS.....	.....L.....T.....T.....S.....N.....TSMGSSNT.....412	
B. CH505T/F	K.....G.....II.....E.....I.....N.....V.....	.....H.....E.....K.....E.....K.....TS.....	.....	.....Q.....Y.....T.....E.....I.....D.....I.....E.....Y.....NES.....E.....	.....Q.....R.....V.....S.....K.....Y.....P.....H.....N.....T.....Q.....P.....	.....L.....T.....T.....TSS.....R.....YMAN.....DMA.....S.....392	
C. X1936	K.....K.....II.....E.....L.....N.....	.....H.....E.....P.....I.....G.....SM.....	.....	.....Q.....T.....F.....A.....T.....E.....I.....D.....I.....E.....S.....K.....	.....Q.....R.....V.....S.....K.....H.....P.....K.....Q.....PP.....	.....L.....T.....TSK.....INS.....VMV.....D.....D.....410	
B. HXB2	GSD--TITLPCR	IKQLINMQRVKGAMYAPPISGQIRCSSNITGLLLTRDGGN	---	SNN--ESEIFR	PGGGMDRDNWSELYKYKVKIEPLGVAPTAKARRVQREKRAVG-IGALFLGFLGAAGSTMGAASMTLVQARQLLSGIVQQQNLLRAIEA	561	
B. JRC5F	.N--I.I.	.....E.....K.....K.....	---	NES--I.	.....K.....	.....553	
B. SS196.1	.NG--	.....V.....L.....E.....R.....L.....	---	N-TTT	.....GTQT.....R.....R.....R.....A.....L.....	.....554	
B. Bal.26	ENN--	.....E.....R.....R.....	---	P-EDD	---KT.V.....VL.....L.....	.....558	
B. YU2	RN---	.....R.....	---	K-DT	---GT.....I.....	.....558	
A. KHH1209	.N-D..L.	.....RT.Q.....P.L.S.K.....II.	---	G-N.T	---T.....R.....Q.....R.....R.....	.....V.....I.....S.....548	
B. MN	.N-NN..Q.K.	.....R.....	---	KD-TDT	---DT.....A.....V.....L.....	.....S.....562	
C. C54	---SI..I.	.....E.....R.....E.N.T.K.....V.	---	G-TEP	---DT.T.....N.....E.K.....T.....M.E.....	.....V.....V.....I.....S.....T.....557	
C. SF162	.....R.....E.....	.....K.....E.....IS	---	TT.....T-L.M.	.....R.L.....	.....552	
B. PVO.4	.NN--	.....V.....E.....K.L.K.T.....	---	AN-NT	---T.....Q.....I.....R.....R.....	.....TL.M.....V.....K.....571	
A. KHH1144	ETN-D..Q.	.....RT.Q.I.....Q.V.....E.	---	EEKN.T	---T.....R.....R.....G.....	.....I.....I.....S.....566	
B. CH505T/F	TNSTR..IH.	.....E.....R.....A.N.T.I.	---	GK-NT	---T.....N.K.....EVK.....N.R.....E.....	.....M.V.....I.....S.....K.....544	
C. X1936	N--S.	.....G.....R.....A.N.T.N.S.....I.	---	IG-NGTD	---KT.....A.....E.K.....I.....E.....	.....V.....V.....S.....562	
B. HXB2	QQHLLQLTVWGIKQLQARILAVERYLKDDQLLGIWCGSKGLICTTAVPWNASWNSKLEQIVNHTTWMEWDREINNYTSLIHSLEESQNKQEKNEQELLEDKWASLWNFNITNWLWYIKLFIMIVGGLVGLRIVFAVLSIVN					706	
B. JRC5F	.....M.....V.....M.....T.....DS..NM.....EK..E.....NT.YT.....I.....E.K.....I.....I.....K.....S.....					698	
B. SS196.1	.....V.....L.....R.....S.....T.....YKE.ENM..IQ.E..D..GI.YE.....EN..S.....I.....V.....S.....K.....					699	
B. Bal.26	.....V.....R.....NK.DNM.....I.Y.....D.K.....I.....I.....S.....					703	
B. YU2	.....V.....R.....T.....T.....NE.DNM..K.E..D..HI.Y..Q.....A.....D.K.....I.....I.....V.....					693	
A. KHH1209	.....K.....V.....R.....N.....S.....YND.DNM..LQ.K..H..Q..YN.....D.A.....N.....H.....I.....V.....I.....I.....					703	
B. MN	.....M.....V.....F.....R.....T.....DD..NM..Q.E..D..Y..L.K..T.....D.H.....I.....V.....I.....I.....					707	
C. C54	.....T.V.I.....S.....QKE.DNM..Q.K..S..NT.YR.L.....R.KD.A..S.KN..S..D.....I.....I.....I.....I.....					702	
C. SF162	.....V.....D.....D.....NM.....E.....D.....N.....YT.....D.SK.....I.....I.....T.....					697	
B. PVO.4	.....M.....V.....I.....T.....FNK.DNM.....E.....D.....G..YN.L.....D.A.....E.....S.K.....I.....I.....I.....					716	
A. KHH1144	.....M.K.....V.....R.....N.....S.....QDE..NM..LQ.K..S..N..Y.....D.A.G..N..T..D.S.....RI.....I.....AVIK					711	
B. CH505T/F	.....M.K.....V.....L.....M.....N.Y..S.....TYGD..DNM..Q.E..S..EI.YE.L.....D.A..R.N.....I.....I.....I.....L.....					689	
C. X1936	.....M.....T.V.I.....L.....I.....TYNE.DNM..Q.....DT.YR.L.Q.....Q.KD.A..S.KN.....D.....I.....I.....A.....					707	

MPER

**SUPPLEMENTARY FIG. S1.** HIV envelope alignment. Amino acid sequence alignment of outerdomain of HIV-1 envelopes. Membrane external proximal region (MPER) is noted; CAP205-CH12 MAb sensitive MPER residues<sup>(19)</sup> are highlighted in yellow. CD4 contact sites and CD4 binding loop are highlighted in orange. Red lines indicate CH103 MAb and CH505 T/F contact residues.