

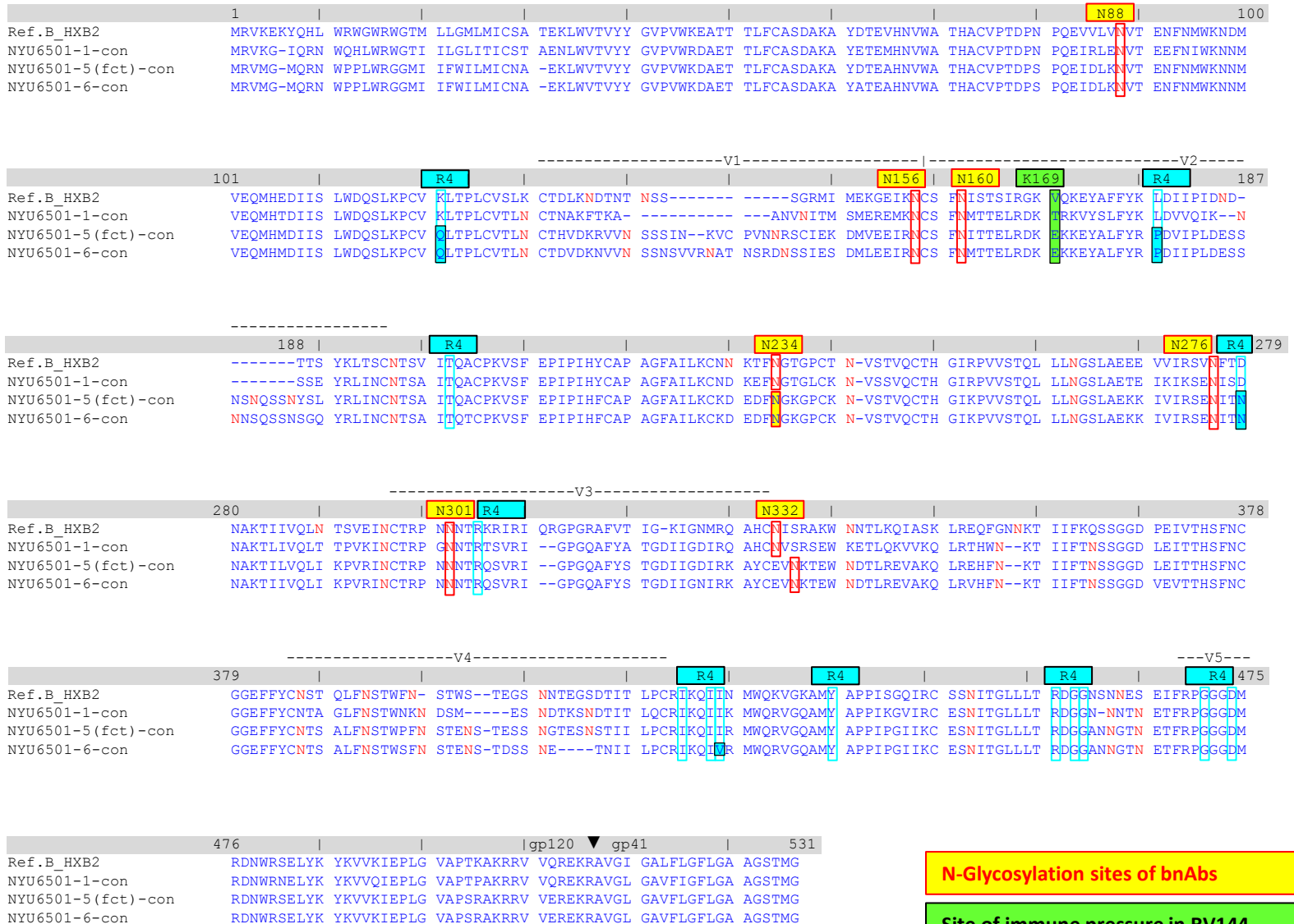
6564 - bnAb + CD4 epitopes / N-Glycosylation sites

	1										N88	100
Ref.B_HXB2	MRVKEKYQHL	WRWGWRWGM	LLGMLMICA	TEKLWVTVY	GVPVWKEAT	TLFCASDAKA	YDTEVHNVA	THACVPTDPN	PQEVVLTMT	ENFNMWKNM		
NYU6564-1-con	MRVME-IQKN	YPLLWRWGM	ISLLMIMCNA	N-KLWVTVY	GVPVWRDAET	TLFCASDAKA	YDTEAHNVA	THACVPTDPN	PQEMNLTMT	EKFNMWKNM		
NYU6564-2-con1	MRVMG-IQRN	CPLFWRWGTI	IFWIMIICA	-EQLWVTVY	GVPVWKAET	TLFCASDAKA	FDTEVHNVA	THACVPTDPD	PQEMELKNVT	ENFNMWKNMG		
NYU6564-2-con2	MRVMG-IQRN	CPLFWRWGTI	IFWIMIICA	-EQLWVTVY	GVPVWKAET	TLFCASDAKA	FDTEVHNVA	THACVPTDPD	PQEMELKNVT	ENFNMWKNMG		
NYU6564-3-con1	MRVMG-IQRN	CPLFWRWGTI	IFWIMIICA	-EQLWVTVY	GVPVWKAET	TLFCASDAKA	FDTEVHNVA	THACVPTDPD	PQEMELKNVT	ENFNMWKNMG		
NYU6564-3-con2	MRVMG-IQRN	CPLFWRWGTI	IFWIMIICA	-EQLWVTVY	GVPVWKAET	TLFCASDAKA	FDTEVHNVA	THACVPTDPD	PQEMELKNVT	ENFNMWKNMG		
NYU6564-4-con	MRVMG-IQRN	CPLFWKWSTI	IFWIMIICA	-EQLWVTVY	GVPVWKAET	TLFCASDAKA	FDAEVHNVA	THACVPTDPD	PQEMELKNVT	ENFNMWKNMG		
-----V1-----V2-----												
	101		R4			N156	N160	K169	R4			193
Ref.B_HXB2	VEQMEDIIS	LWDQSLKPCV	KLTPLCVSLK	CTDLKNDTNT	NSSSGRMIME	KGEIVKCSFN	ISTTSIRGPD	KEYAFFYKLD	IIPIDN----	---DTSYKL		
NYU6564-1-con	VEQMHTDIIS	LWEQSLKPCV	KLTPLCVTLV	CDLTKNDTNT	-E-SNMNEDM	GGEIVKCSFN	TTEIRDKK	RITSLFYKLD	VVPLEGNSIS	SNNGSRQYRL		
NYU6564-2-con1	VDQMHQDIIS	LWDQSLKPCV	KLTPLCVTLT	CVANAVTRNN	-TLHNVTDGI	GGEIVKCSFN	TTTVLRDKK	RVHALFYKLD	VVQIGE----	---DNQTYRL		
NYU6564-2-con2	VDQMHQDIIS	LWDQSLKPCV	KLTPLCVTLT	CVANAVTRNN	-TLHNVTDGI	GGEIVKCSFN	TTTVLRDKK	RVQALFYKLD	VVQIGE----	---DNQTYRL		
NYU6564-3-con1	VDQMHQDIIS	LWDQSLKPCV	KLTPLCVTLT	CVANAVTRNN	-TLHNVTDGI	GGEIVKCSFN	TTTVLRDKK	KVNALFYKLD	IVQIGE----	---DNQTYRL		
NYU6564-3-con2	VDQMHQDIIS	LWDQSLKPCV	KLTPLCVTLT	CVANAVTRNN	-TLHNVTDGI	GGEIVKCSFN	TTTVLRDKK	KVHALFYKLD	IVQIGE----	---DNQTYRL		
NYU6564-4-con	VDQMHQDIIS	LWDQSLKPCV	KLTPLCVTLT	CVANAVTLNG	-TLHNVTD---	-EVKNCSEFN	TTTVLRDKK	KVHALFYKLD	IVQIGE----	---DNQTYRL		

	194					N234		N276	R4			293
Ref.B_HXB2	TSCNTSVITQ	ACPKVSEFPI	PIHYCAPAGF	AILKCNKNTF	IGTGPCKNVS	TVQCTHGIRP	VVSTQLLLNG	SLAEDEVVIR	SEITTNNAKI	IIVQLNVSVE		
NYU6564-1-con	INCNTSAITR	ACPKVNFEPH	PIHYCAPAGF	AILKCKDKAF	IGTGPCNVNS	TVQCTHGIRP	VVSTQLLLNG	SLAEDEVVIR	SEITTNNAKI	IIVQLVRPIK		
NYU6564-2-con1	INCNTSAITQ	ACPKVSEFPI	PIHYCAPAGF	AILKCNKDNF	IGTGPCKNVS	TVQCTHGIRP	VVSTQLLLNG	SLAEDEVIMV	SEITTNNAKI	IIVQLRAPVK		
NYU6564-2-con2	INCNTSAITQ	ACPKVSEFPI	PIHYCAPAGF	AILKCNKDNF	IGTGPCKNVS	TVQCTHGIRP	VVSTQLLLNG	SLAEDEVIMV	SEITTNNAKI	IIVQLRTPVK		
NYU6564-3-con1	INCNTSAITQ	ACPKVSEFPI	PIHYCAPAGF	AILKCNKDNF	IGTGPCKNVS	TVQCTHGIRP	VVSTQLLLNG	SLAEDEVIMV	SEITTNNAKI	IIVQLRTPVK		
NYU6564-3-con2	INCNTSAITQ	ACPKVSEFPI	PIHYCAPAGF	AILKCNKDNF	IGTGPCKNVS	TVQCTHGIRP	VVSTQLLLNG	SLAEDEVIMV	SEITTNNAKI	IIVQLRNPVK		
NYU6564-4-con	INCNTSAITQ	ACPKVSEFPI	PIHYCAPAGF	AILKCNKDNF	IGTGPCKNVS	TVQCTHGIRP	VVSTQLLLNG	SLAEDEVIMV	SEITTNNAKI	IIVQLRNPVK		
-----V3-----												
	294	N301	R4			N332						392
Ref.B_HXB2	INCTRPNMNT	RKRIRIQRGP	GRAFVTIGK-	IGNMRQAHCH	ISRAKWNNIL	KQIASKLREQ	FGNNKTIIFK	QSSGGDPEIV	THSFNCGGEF	FYCNTSTQLFN		
NYU6564-1-con	INCTRPNMNT	RISTR--IGP	GQAFYTTGDI	IGDIRRAHCH	KQTEWDNTL	QEVTTRLGEY	FGINDTIIFN	KSSGGDVEIT	THSFNCGGEF	FYCNTSRLLFD		
NYU6564-2-con1	IVCIRPNMNT	RTGVH--IGP	GQTFYAIGDI	TGDIRQAHCH	ISKIQWNNTAL	QVQGAQLQRY	FGNNTTITFV	NSSGGDLEVT	THSFNCGGEF	FYCNTSGLFN		
NYU6564-2-con2	IVCIRPNMNT	RKGVH--IGP	GQTFYAIGDI	TGDIRQAHCH	ISKIQWNNTL	QRVGAQLQEQY	FGNNTTITFA	NSSGGDLEIT	THSFNCGGEF	FYCNTSGLFN		
NYU6564-3-con1	IVCIRPNMNT	RKGVH--IGP	GQTFYAIGDI	TGDIRQAHCH	ISKIQWNNTAL	QVQGAQLQEQY	FGNNTTITFA	NSSGGDLEIT	THSFNCGGEF	FYCNTSGLFN		
NYU6564-3-con2	IVCIRPNMNT	RTGVH--IGP	GQTFYAIGDI	IGDIRQAHCH	ISKKDWNTTL	QKVGQAQLQEQY	FGNNTTITFA	NSSGGDLEIT	THSFNCGGEF	FYCNTSGLFN		
NYU6564-4-con	IVCIRPNMNT	RTGVH--IGP	GQTFYAIGDI	IGDIRQAHCH	ISKKDWNEAL	QKVGQAQLQEQY	FGNDTTITFA	NSSGGDLEIT	THSFNCGGEF	FYCNTSGLFN		
-----V4-----V5-----												
	393			R4	R4		R4		R4			483
Ref.B_HXB2	STWFNS--TW	STEGSN-NTE	GSDTITLPCR	IRQIIVNMWQK	VGKAMYAPPI	SGQIRCSSNI	TGLLLTRDGG	NSN-----N	ESEIFRFGGG	DMRDNRWSEL		
NYU6564-1-con	STWRKNDNNW	TNTA-NTTSN	GNDTITLQCR	IRQIIVNMWQK	VGLAMYAPPI	RGIIRCNSTI	TGLLLTRDGG	KENNSTKNGT	GNETFRFGGG	DMRDNRWSEL		
NYU6564-2-con1	G-----TW	NGTNSTI-ND	SNETITLPCR	IRQIIVNMWQR	VGQAMYAPPI	SGIIRCENSI	TGLLLTRDGG	DNT-----S	SSEIFRFGGG	DMRDNRWSEL		
NYU6564-2-con2	GTFNG---TW	NGTNSTISSD	SNETITLPCR	IRQIIVNMWQR	VGQAMYAPPI	SGIIRCENSI	TGLLLTRDGG	DNT-----N	NSEIFRFGGG	DMRDNRWSEL		
NYU6564-3-con1	GTFNG---TW	NGTNSTIS-D	SNETITLPCR	IRQIIVNMWQR	VGQAMYAPPI	SGIIRCENSI	TGLLLTRDGG	DNT-----S	SSEIFRFGGG	DMRDNRWSEL		
NYU6564-3-con2	GTFNG---TW	NGTYSNIS-N	SNETITLPCR	IRQIIVNMWQR	VGQAMYAPPI	SGIIRCENSI	TGLLLTRDGG	NNKT----N	NSEIFRFGGG	DMRDNRWSEL		
NYU6564-4-con	GTFNG---TW	NGTNSTIS-N	STENITLPCR	IRQIIVNMWQR	VGQAMYAPPI	SGAIIRCENSI	TGLLLTRDGG	NNT-----N	KKEIFRFGGG	DMRDNRWSEL		
-----gp120▼gp41-----531												
	484											531
Ref.B_HXB2	YKYKVVQIEP	LGVAPTKAKR	RVVQREKR-A	VGIGALFLGF	LGAAGSTMG							
NYU6564-1-con	YKYKVVQIEP	LGVAPTHAKR	RVVEREKR-A	VGLGAFPLGF	LGAAGSTMG							
NYU6564-2-con1	YKYKVVQIEP	LGVAPTRAKR	RVVEREKRAA	IGLGALFLGF	LGAAGSTMG							
NYU6564-2-con2	YKYKVVQIEP	LGVAPTRAKR	RVVEREKRAA	IGLGALFLGF	LGAAGSTMG							
NYU6564-3-con1	YKYKVVQIEP	LGVAPTRAKR	RVVEREKRAA	IGLGALFLGF	LGAAGSTMG							
NYU6564-3-con2	YKYKVVQIEP	LGVAPTRAKR	RVVEREKRAA	IGLGALFLGF	LGAAGSTMG							
NYU6564-4-con	YKYKVVQIEP	LGVAPTRAKR	RVVEREKRAA	IGLGALFLGF	LGAAGSTMG							

- N-Glycosylation sites of bnAbs
- Site of immune pressure in RV144
- Sites of resistance to CD4bs bnAbs

6501 - bnAb + CD4 epitopes / N-Glycosylation sites



S11 Fig. Env amino acid alignment with indicated bnAb epitope regions and sites of immune pressure.

Consensus Env amino acid sequences were aligned with reference sequence HXB2. The N-glycosite tool from the Los Alamos HIV database was used to highlight N-glycosylation sites, red. N-glycosylation sites critical for selected bnAbs are boxed in red: N88 (gp120/gp41 interphase bnAb 35O22), N156 and N160 (V2 glycan bnAbs, e.g. PG9/PG16), N234 and N276 (gp120/gp41 interphase bnAb 8ANC195), N301 and N332/N334 (V3 glycan bnAbs, e.g. PGT121/PGT128). Mutated N-glycosylation sites are highlighted in yellow. The site of immune pressure (169 in V2), as described in the RV144 vaccine trial, and sites of resistance to CD4bs bnAbs are boxed in green and blue, respectively, according to deCamp et al. 2014 [18]. Critical mutations at both sites are highlighted in respective colors. **A)** Alignment of NYU6501 Env amino acid sequences. **B)** Alignment of NYU6564 Env amino acid sequences.