

Part I-B: List of epitopes by HLA presenting molecule

Note: Appropriate amino acids in positions consistent with anchor residues are underlined and in bold face. Because most CTL information is based on HLA serotypes, not HLA genotypes, this section is organized by serotype.

Table 1: **HIV HLA-A1 Epitopes**

Location	Epitope	Reference
Anchor residues: 2 (TSM), 3 (DE), 4 (P), C term (Y)		[Kast (1994), DiBrino (1994b)]
HLA-A1 Anchor/auxiliary residues: 2 (TS), 3(DE), 4 (P), 7 (L), 9 (Y)		[Rammensee (1995)]
p17(71–79 LAI)	GSEELRSLY	[Brander & Walker(1997a), Birk (1998)]
Rev(55–63 LAI)	ISERILSTY	[van Baalen (1997)]
Nef(66–80 BRU)	VGFPVTPQVPLRMT	[Hadida (1992)]
Nef(93–106 BRU)	EKGGLEGLIHSQRR	[Hadida (1992)]
Nef(113–128 BRU)	WIYHTQGYFPDWQNYT	[Hadida (1992)]
Nef(132–147 BRU)	GVRYPITFGWCYKLV	[Hadida (1992)]
Nef(182–198 BRU)	EWRFD SRLAFHHVAREL	[Hadida (1992), Hadida (1995)]
Nef(192–206 BRU)	HHVARELHPEYFKNC	[Hadida (1992)]

Table 2: **HIV HLA-A2.1 Epitopes**

Location	Epitope	Reference
RT(485–493 HXB2R)	ALQDSGLEV	[Brander (1996), Brander (1995a)]
gp160(192–200)	TLTSCNTSV	[Brander (1996)]
gp160(311–320 IIIB)	RGPGRAFVTI	[Alexander-Miller (1996)]

Table 3: HIV HLA-A2 Epitopes

Location	Epitope	Reference
Anchor residues: 2 (LI), C term (VL) HLA-A*0201 Anchor/auxiliary residues: 2 (LM), 6 (V), 9 (V,L)		[Falk (1991), McMichael & Walker(1994)] [Rammensee (1995)]
HLA-A*0202 Anchor/auxiliary residues: 2 (LA), 9 (L,V)		[Rammensee & communication.(1997)]
HLA-A*0203 Anchor/auxiliary residues: 2 (L), 9 (L)		[Rammensee & communication.(1997)]
HLA-A*0205 Anchor/auxiliary residues: 2 (VLIM), 6 (IVLA), 9 (L)		[Rammensee (1995)]
p17(69-93)	QTGSEELRS <u>L</u> YNTVAT <u>L</u> YCVHQRIE	[Johnson (1991)]
p17(77-85 LAI)	<u>S</u> L <u>Y</u> NTVAT <u>L</u>	[Parker (1992), Parker (1994), Tsomides (1994), McMichael & Walker(1994), Yang (1996), Rowland-Jones (1998a), Yang (1997a), Sipsas (1997), Cao (1997), Walter (1997), Stuhler & Schlossman(1997), Sewell (1997), Birk (1998), Callan (1998), Wagner (1998a), Collins (1998), Durali (1998), Kundu (1998b), van der Burg (1996), Goulder (1997b), Wilson (1998a), McAdam (1998), Goul- der (1997a), Hay (1999)]
p17(88-115 ARV)	VHQRIEIKDTKEALDKIEEEQNKSKKKA	[Achour (1990)]
p24(19-27)	<u>T</u> <u>L</u> NAWVK <u>V</u> <u>V</u>	[Parker (1992), Parker (1994)]
p24(61-71 BRU)	GHQA <u>A</u> MQM <u>L</u> KE	[Claverie (1988)]
p24(87-101 BRU)	HAGPIAPGQMREPRG	[Claverie (1988)]
p24(131-146)	KRW <u>I</u> LGLNK <u>I</u> VRMYC	[Chen (1990)]
p2p7p1p6(83-97 BRU)	GNFLQSRPEPTAPPF	[Claverie (1988), Kast (1994)]
p2p7p1p6(55-70 BRU)	KEGHQMKDCTERQANF	[Claverie (1988)]
Pr(75-84 MN)	<u>V</u> <u>L</u> VGPT <u>P</u> <u>V</u> NI	[Konya (1997)]
RT(3-12)	<u>S</u> <u>P</u> IETVP <u>V</u> <u>K</u> <u>L</u>	[van der Burg (1997)]
RT(33-41)	<u>A</u> <u>L</u> VEICTEM	[van der Burg (1995), van der Burg (1996)]
RT(108-118)	<u>V</u> <u>L</u> DVGDAYFSV	[Kundu (1998b), van der Burg (1995), van der Burg (1996)]
RT(209-220)	<u>L</u> <u>L</u> RWGLTTPDKK	[Haas (1998)]
RT(179-187)	<u>V</u> <u>I</u> YQYMM <u>D</u> <u>L</u>	[Rowland-Jones (1998b), Hanke (1998a), Hanke (1998b), Harrer (1996a), Haas (1998)]

Table 3: HIV HLA-A2 Epitopes (cont.)

Location	Epitope	Reference
RT(180–189)	IYQYMD DL YV	[van der Burg (1997)]
RT(421–429)	PLV KL WYQL	[Haas (1998)]
RT(463–472)	EIL KE PVGHV	[van der Burg (1997)]
RT(309–317)	IL KE PVGHV	[Tsomides (1991), Parker (1992), Connan (1994), Tsomides (1994), Moss (1995), Pogue (1995), van der Burg (1995), Altman (1996), van der Burg (1996), Yang (1996), Cao (1997), Fan (1997), Goulder (1997b), Goulder (1997a), Konya (1997), Musey (1997), Walter (1997), Yang (1997a), Hanke (1998a), Hanke (1998b), Kundu (1998b), Ogg (1998b), Rowland-Jones (1998b), Wilson (1998a)]
RT(516–525)	ELVNQIIEQL	[Haas (1998)]
RT(640–648 HXB2R)	ALQDSGLEV	[Brander (1995b)]
Integrase(241–249 HXB2R)	LLWKGE GA V	[Parker (1992), Parker (1994), Brander (1995b), Kundu (1998b), van der Burg (1996)]
gp160(34–55 BRU)	LWVTVYYGVPVWKEA TTT L F CA	[Dadaglio (1991)]
gp160(33–42 LAI)	KLWVTVYYGV	[Dupuis (1995)]
gp160(105–117 IIIB)	HEDIISLWDQSLK	[Clerici (1991)]
gp160(121–129 LAI)	KL T P L CV T L	[Dupuis (1995), Kundu (1998b), Kmiecik (1998)]
gp160(188–207 BRU)	TTSY T L T SCNTS V ITQACPK	[Dadaglio (1991)]
gp160(192–200 HXB2R)	KL T SCNTS V	[Brander (1995b)]
gp160(192–200 HXB2R)	TL T SCNTS V	[Garboczi (1992), Brander (1996)]
gp160(291–307 BRU)	SVEIN C TRPNNNTRKSI	[Dadaglio (1991)]
gp160(308–322 IIIB)	RIQRGPGRAFVTIGK	[Dadaglio (1991), Clerici (1991), Achour (1993)]
gp160(311–320 IIIB)	RGPGRAFVTI	[Achour (1996)]
gp160(311–320 SIMI)	MGPKRAFYAT	[Achour (1996)]
gp160(377–387)	NSGGEFFYSNS	[Hickling (1990)]
gp160(376–387 BRU)	KNCGGEFFYCNS	[Dadaglio (1991)]
gp160(421–436 IIIB)	KQIINMWQE V GKAMY	[Cease (1987), Clerici (1991)]

Table 3: HIV HLA-A2 Epitopes (cont.)

Location	Epitope	Reference
gp160(421–435 LAI)	KQFINMWQEVGKAMY	[Dadaglio (1991)]
gp160(489–508 BRU)	VKIEPLGVAPTAKRRRVQR	[Dadaglio (1991)]
gp160(747–755)	<u>R</u> LVNGSL <u>A</u> L	[Parker (1992)]
gp160(813–822 LAI)	S <u>L</u> LNATDIA <u>V</u>	[Dupuis (1995), Kundu (1998b)]
gp160(814–822 LAI)	<u>L</u> LNATDIA <u>V</u>	[Dupuis (1995)]
gp160(814–822)	<u>L</u> LNATAIA <u>V</u>	[Kmieciak (1998)]
gp160(827–841 IIIB)	DRVIEVVQGAYRAIR	[Clerici (1991)]
gp160(828–836 LAI)	R <u>V</u> IEV <u>L</u> QRA	[Dupuis (1995)]
Nef(73–82 LAI)	QVPLRPMTY <u>K</u>	[Robertson (1993)]
Nef(86–100 LAI)	DLSHFLKEKGG <u>L</u> EG <u>L</u>	[Robertson (1993)]
Nef(136–145 LAI)	<u>P</u> LTFGW <u>C</u> Y <u>K</u> L	[Haas (1996), Durali (1998)]
Nef(180–189 LAI)	<u>V</u> LEWR <u>F</u> DS <u>R</u> L	[Haas (1996), Haas (1997), Wilson (1999b)]
Nef(190–198 LAI)	AFHHVARE <u>L</u>	[Hadida (1995), Rowland-Jones (1998b), Wilson (1999b)]

Table 4: HIV HLA-A3.1 Epitopes

Location	Epitope	Reference
Anchor residues: 2 (IL), 3 (F), C term (KY)		[DiBrino (1993), McMichael & Walker(1994)]
p17(18–26 LAI)	<u>K</u> IRLR <u>P</u> GG <u>K</u>	[Harrer (1996b)]
p17(20–29)	<u>R</u> LR <u>P</u> GGKK <u>K</u> <u>Y</u>	[Brander & Walker(1995), Wilkens & Ruhl(1999)]
RT(158–166)	<u>A</u> IFQSS <u>M</u> T <u>K</u>	[Brander & Walker(1995)]
gp160(37–46 LAI)	TVYYGVPV <u>V</u> <u>K</u>	[Johnson (1994a), Johnson (1994b), Hammond (1995)]
gp160(770–780 NL43)	<u>R</u> LRD <u>L</u> LLIV <u>T</u> R	[Takahashi (1991)]
Nef(73–82 NL432)	QVPLRPMTY <u>K</u>	[Koenig (1990)]
Nef(86–94 LAI)	<u>D</u> LSHFLKE <u>K</u>	[McMichael & Walker(1994)]

Table 5: **HIV HLA-A3 Epitopes**

Location	Epitope	Reference
HLA-A3 Anchor/auxiliary residues: 2 (LVM), 3 (FY), 6 (IMFVLT), 7 (ILMF), 9 (KYF), 10 (K)		[Rammensee (1995)]
p17(18–26 LAI)	KIRLRPGG <u>K</u>	[Harrer (1996b), Goulder (1997b), Goulder (1997a), Wilson (1999a)]
p17(20–28)	RLRPGGKK <u>K</u>	[Goulder (1997b), Goulder (1997a), Goulder (1997f), Cao (1997)]
p17(20–29 LAI)	RLRPGGKKKY	[Wilkens & Ruhl(1999)]
p17(18–31)	KIRLRPGGKK <u>K</u> YKL	[Birk (1998), Jassoy (1992), Jassoy (1993)]
RT(33–43)	AL <u>V</u> EICTEME <u>K</u>	[Haas (1998)]
RT(158–166 IIIB)	AIFQSSM <u>T</u> <u>K</u>	[Wilson (1999a)]
RT(192–201)	D <u>L</u> EIGQHRT <u>K</u>	[Haas (1998)]
RT(158–166 IIIB)	AIFQSSM <u>T</u> <u>K</u>	[Threlkeld (1997), Brander & Walker(1997a), Cao (1997)]
gp160(37–46 LAI)	T <u>V</u> Y <u>Y</u> GVPVW <u>K</u>	[Goulder (1997b), Goulder (1997b)]
gp160(770–780 NL43)	RLRDLLLVTR	[Cao (1997)]
gp160(308–322 IIIB)	RIQRGPGRAFV <u>T</u> IG <u>K</u>	[Achour (1993)]
Nef(73–82 BRU)	QVPLRP <u>M</u> TY <u>K</u>	[Culmann (1991), Goulder (1997b), Lubaki (1997), Durali (1998)]
Nef(74–82 BRU)	VPLRP <u>M</u> TY <u>K</u>	[Carreno (1992)]
Nef(190–198 LAI)	AFHHVARE <u>K</u>	[Hadida (1995)]

Table 6: **HIV HLA-A11 Epitopes**

Location	Epitope	Reference
Anchor residues: 2 (IL), C term (K) HLA-A*1101 Anchor/auxiliary residues: 2 (VIFY), 3 (MLFYIA), 7 (LIYVF), 9 (K), 10 (K), 11(K)		[Zhang (1993), McMichael & Walker(1994)] [Rammensee (1995)]
p17(84–91)	<u>T</u> LYCVHQR	[Harrer (1998)]
p17(84–92)	<u>T</u> LYCVHQRI	[Brander & Walker(1995), Birk (1998)]
p24(217–227 IIIB)	ACQGVGGPGH <u>K</u>	[Sipsas (1997)]
RT(158–166 LAI)	A <u>I</u> FQSSM <u>T</u> <u>K</u>	[Zhang (1993), Johnson & Walker(1994), McMichael & Walker(1994), Brander & Walker(1995), Jassoy (1993), Price (1995), Threlkeld (1997), Brander & Walker(1997a), Wagner (1998a)]
RT(175–199 LAI)	NPDIVIYQYMDDLYVGS DLEIGQHR	[Walker (1989)]
RT(340–352 LAI)	Q <u>I</u> YQEPFKNL <u>K</u> TG	[Johnson & Walker(1994), Walker (1989)]
gp160(308–322 IIIB)	RIQRGPGRA <u>F</u> V <u>T</u> I <u>G</u> <u>K</u>	[Achour (1994)]
Nef(73–82 LAI)	QV <u>P</u> <u>L</u> RPMTY <u>K</u>	[Culmann (1991), Couillin (1994), Couillin (1995), Goulder (1997a)]
Nef(74–82 LAI)	V <u>P</u> <u>L</u> RPMTY <u>K</u>	[Zhang (1993)]
Nef(75–82 LAI)	<u>P</u> <u>L</u> RPMTY <u>K</u>	[McMichael & Walker(1994)]
Nef(84–92 LAI)	A <u>V</u> DL <u>S</u> H <u>F</u> L <u>K</u>	[McMichael & Walker(1994), Couillin (1994), Couillin (1995), Goulder (1997a)]
Nef(83–94 BRU)	AAVD <u>L</u> SHFLKE <u>K</u>	[Culmann (1991)]

Table 7: **HIV HLA-A19 Epitopes**

Location	Epitope	Reference
RT(3–11 LAI)	ITLWQRPLV	[Dong (1998)]

Table 8: **HIV HLA-A23 Epitopes**

Location	Epitope	Reference
p17(28–36 LAI)	KYKLKHIVW	[Goulder(1999)]

Table 9: **HIV HLA-A24 Epitopes**

Location	Epitope	Reference
Anchor/auxiliary residues: 2 (Y), 5 (IV), 6 (F), 9 (ILF)		[Rammensee (1995)]
p17(28–36 LAI)	<u>K</u> YKLKHIVW	[Brander & Walker(1997a)], D. Lewinsohn pers comm
p17(28–36 SF2)A*2402	<u>K</u> YKLKHIVW	[Ikeda-Moore (1998)]
gp160(52–61 LAI)	LFCASCAKAY	[Brander & Walker(1995), Shankar (1996)]
gp160(586–593 NL43)	<u>Y</u> LKDQQL <u>L</u>	[Dai (1992)]
Nef(120–144 SF2)	YFPDWQNYTPGPG <u>I</u> RYPL <u>T</u> FGWCYK	[Jassoy (1992)]

Table 10: **HIV HLA-A25 Epitopes**

Location	Epitope	Reference
p24(13–23 LAI)	QAISPRTLNAW	[Kurane & West(1998)]
p24(71–80)	ETINEEAAEW	[van Baalen (1996), Klenerman (1996)]
Nef(182–198 LAI)	EWRFDSRLAFHHVAREL	[Cheynier (1992), Hadida (1995)]

Table 11: **HIV HLA-A26 Epitopes**

Location	Epitope	Reference
p24(35–43 LAI)	EVIPMFSAL	[Goulder (1996a)]
p24(162–172 SF2)	RDYVDRFYKTL	[Ogg (1998a)]
p24(164–172)	YVDRFFKTL	[Dorrell (1999)]
RT(438–448 IIIB)	ETFYVDGAANR	[Wilson (1999a)]

Table 12: **HIV HLA-A28 or HLA-A68 Epitopes**

Location	Epitope	Reference
p17-p24(127–3 Clade D)	QVSQNYPIV	[Dong (1998)]
Protease(3–11 LAI)	ITLWQRPLV	[Dong (1998)], S. Rowland-Jones pers comm
Protease(30–38 Clade D)	DTVLEEMNL	[Dong (1998)], S. Rowland-Jones pers comm
RT(364–372 U455)	DVKQLTEVV	[Dong (1998)], S. Rowland-Jones pers comm
RT(434–447)	IVGAETFYVDGAAS	[van der Burg (1997)];
RT(437–447 LAI)	AETFYVDGAAN	[Brander & Walker(1997a)], P. Johnson pers comm
Integrase(96–104)	ETAYFILKL	S. Rowland-Jones pers comm

Table 13: **HIV HLA-A29 Epitopes**

Location	Epitope	Reference
Anchor residues: 2 (E), 3 (F), 9 (Y)		[Boisgerault (1996)]
gp160(376–384 IIIB)	FNCGGEFFY	[Wilson (1997), Brander & Walker(1997a)]
gp160(376–384 IIIB)	PNCGGEFFY	[Wilson (1999a)]

Table 14: **HIV HLA-A30 Epitopes**

Location	Epitope	Reference
gp160(845–856 HXB2)	RRIRQGLERILL	[Lieberman (1992)]

Table 15: **HIV HLA-A31 Epitopes**

Location	Epitope	Reference
HLA-A*3101 Anchor/auxiliary residues: 2 (LVYF), 3 (FLYW), 6 (LFVI), 9 (R)		[Rammensee (1995)]
gp160(767–780 LAI)	SYHRLRD <u>LL</u> I <u>V</u> TR	[Hammond (1995)]
gp160(770–780 BH10)	R <u>L</u> RD <u>LL</u> I <u>V</u> TR	[Safrit (1994a), Safrit (1994b)]

Table 16: **HIV HLA-A32 Epitopes**

Location	Epitope	Reference
RT(392–401 LAI)	PIQKETWETW	[Harrer (1996b)]
gp160(419–427 HXB2)	RIKQIINMW	[Harrer (1996b), Ray (1998)]
gp160(701–720 BH10)	VLSIVNRVRQGYSPFSQTH	[Safrit (1994a)]

Table 17: **HIV HLA-A33 Epitopes**

Location	Epitope	Reference
HLA-A*3302 Anchor/auxiliary residues: 2 (AILFYV), 9 (R)		[Rammensee (1995)]
p17(121–132 HXB2R)	DTGHSNQVSQNY	[Buseyne (1993b)]
p24(131–145 LAI)	KRWI <u>I</u> GLNKIV <u>M</u> RY	[Buseyne (1993b)]
RT(158–166 LAI)	A <u>I</u> FQSSMTK	K. Ariyoshi, unpublished

Table 18: HIV HLA-B7 Epitopes

Location	Epitope	Reference
Anchor residues: 1 (A), 2 (P), 3 (R), and C term (LV)		[Englehard (1993), McMichael & Walker(1994)]
Anchor/auxiliary positions: 2 (P), 3 (R), 9 (LF)		[Rammensee (1995)]
p24(16–24)	SP <u>RTL</u> NAW	[Brander & Walker(1997b)]
p24(48–56 IIIB)	TP QDLNTM	[Wilson (1999a)]
p24(211–230 SF2)	LEEMMTACQGVGG P GHKAR V	[McAdam (1998)]
p24(223–231 LAI)	G <u>P</u> GHKAR V	[Goulder (1997b), Goulder (1997a)]
RT(153–165)	WKGSPAIFQSSMT	Brander95a
RT(156–165 SF2)	S <u>P</u> AIFQSSMT	[Brander & Walker(1997b)]
RT(156–164 HXB2)	S <u>P</u> AIFQSSM	[Hay (1999)]
RT(532–540)	YLAWVPAHK	[Haas (1998)]
gp160(252–271 LAI)	R <u>P</u> VVSTQ L LLNGSLAEEVV	[Shankar (1996)]
gp160(298–307 HXB2)	R <u>P</u> NNNTRKSI	[Safrit (1994b), Hammond (1995), Wolinsky (1996)]
gp160(843–851 HXB2)	I <u>P</u> RRIRQ G L	[Brander & Walker(1995), Cao (1997), Hay (1999)]
gp160(845–856 LAI)	R <u>R</u> IRQGLER I LL	[Shankar (1996)]
Nef(68–76)	F <u>P</u> VTPQ V PL	[Wilson (1999b)]
Nef(68–77 LAI)	F <u>P</u> VTPQ V PLR	[Haas (1996)]
Nef(71–79 LAI)	TPQVPLRPM	
Nef(77–85 LAI)	R <u>P</u> MTYKA A L	[Bauer (1997)]
Nef(102–115 LAI)	HS Q <u>R</u> RQDILD L WIY	[Goulder (1997b), Goulder (1997a)]
Nef(126–138 BRU)	NYT P GPGVRY P LT	[Culmann (1991)]
Nef(128–137 LAI)	T <u>P</u> GPGVRY P L	[Haas (1996), Rowland-Jones (1998a), Wilson (1999b)]

Table 19: HIV HLA-B8 Epitopes

Location	Epitope	Reference
Anchor residues: 3 (K), 5 (K), and C terminus (I)		[Sutton (1993), Hill (1992), McMichael & Walker(1994)]
Anchor/auxiliary residues: 3 (K), 5 (KR), 9 (L)		[Rammensee (1995)]
p17(24–35 SF2)	GG <u>K</u> <u>K</u> <u>K</u> Y <u>K</u> L <u>K</u> HIV	[Goulder (1997a), Birk (1998)]
p17(24–32)	GG <u>K</u> <u>K</u> <u>K</u> Y <u>K</u> L <u>K</u>	[Klenerman (1994), Klenerman (1995), Nowak (1995)]
p17(24–32 LAI)	GG <u>K</u> <u>K</u> <u>K</u> Y <u>K</u> L	[Sutton (1993), Rowland-Jones (1993a), Reid (1996), Price (1997), Goulder (1997g)]
p17(74–82 LAI)	EL <u>R</u> S <u>L</u> Y <u>N</u> T <u>V</u>	[Goulder (1997g), Birk (1998)]
p17(93–101)	E <u>I</u> <u>K</u> D <u>T</u> K <u>E</u> A <u>L</u>	[DiBrino (1994b), Brander & Walker(1997b), Birk (1998)]
p24(197–205 LAI)	D <u>C</u> <u>K</u> T <u>I</u> L <u>K</u> A <u>L</u>	[Goulder (1997g)]
p24(121–135)	N <u>P</u> I <u>P</u> V <u>G</u> E <u>I</u> Y <u>K</u> R <u>W</u> I <u>I</u>	[Gotch (1990), Nowak (1995), McAdam (1995), Phillips (1991), Johnson (1991), Goulder (1997a)]
p24(124–138 LAI)	I <u>P</u> V <u>G</u> E <u>I</u> Y <u>K</u> R <u>W</u> I <u>I</u> L <u>G</u> L	[Buseyne (1993b)]
p24(127–135 LAI)	G <u>E</u> I <u>Y</u> <u>K</u> R <u>W</u> I <u>I</u>	[Sutton (1993), Klenerman (1994), Nowak (1995), McAdam (1995)]
p24(128–135 LAI)	E <u>I</u> Y <u>K</u> R <u>W</u> I <u>I</u>	[Goulder (1997g)]
p24(181–190 LAI)	V <u>K</u> N <u>W</u> M <u>T</u> E <u>T</u> L <u>L</u>	[Brander & Walker(1997a)], P. Johnson pers comm
p24(191–205)	V <u>Q</u> N <u>A</u> N <u>P</u> D <u>C</u> <u>K</u> T <u>I</u> L <u>K</u> A <u>L</u>	[Nixon & McMichael(1991), Phillips (1991)]
p24(197–205 LAI)	D <u>C</u> <u>K</u> T <u>I</u> L <u>K</u> A <u>L</u>	[Sutton (1993), Nowak (1995), McAdam (1995), Goulder (1997g), Goulder (1997a)]
RT(5–29 HXB2)	I <u>E</u> T <u>V</u> P <u>V</u> K <u>L</u> K <u>P</u> G <u>M</u> D <u>G</u> P <u>K</u> <u>V</u> <u>K</u> Q <u>W</u> P <u>L</u> T <u>E</u> E	[Walker (1989)]
RT(18–26 LAI)	G <u>P</u> <u>K</u> <u>V</u> <u>K</u> Q <u>W</u> P <u>L</u>	[Nixon & McMichael(1991), Phillips (1991), Sutton (1993), Meier (1995), Klenerman (1995), Goulder (1997g), Menendez-Arias (1998)]
gp160(586–593)	Y <u>L</u> <u>K</u> D <u>Q</u> Q <u>L</u> L	[Dai (1992), Johnson (1992), Sutton (1993), Goulder (1997g)]
gp160(845–856 HXB2)	R <u>R</u> I <u>R</u> Q <u>G</u> L <u>E</u> R <u>I</u> L <u>L</u>	[Lieberman (1992)]
gp160(2–10 IIIB)	R <u>V</u> <u>K</u> E <u>K</u> Y <u>Q</u> H <u>L</u>	[Sipsas (1997)]
Nef(13–20 LAI)	W <u>P</u> T <u>V</u> R <u>E</u> R <u>M</u>	[Brander & Walker(1997a), Goulder (1997g)]
Nef(66–80 BRU)	V <u>G</u> F <u>P</u> V <u>T</u> P <u>Q</u> V <u>P</u> L <u>R</u> M <u>T</u>	[Hadida (1992)]
Nef(90–97 LAI)	F <u>L</u> <u>K</u> E <u>K</u> G <u>G</u> L	[McMichael & Walker(1994), Price (1997), Goulder (1997g), Hadida (1992)]
Nef(93–106 BRU)	E <u>K</u> G <u>G</u> L <u>E</u> G <u>L</u> I <u>H</u> S <u>Q</u> R <u>R</u>	[Hanke (1998a), Hanke (1998b), Goulder (1997g)]
Nef(132–147 BRU)	G <u>V</u> R <u>Y</u> P <u>L</u> T <u>F</u> G <u>W</u> C <u>Y</u> K <u>L</u> V <u>P</u>	[Hadida (1992)]
Nef(182–198 BRU)	E <u>W</u> R <u>F</u> D <u>S</u> R <u>L</u> A <u>F</u> H <u>H</u> V <u>A</u> R <u>E</u> L	[Hadida (1992)]

Table 19: **HIV HLA-B12 Epitopes**

Location	Epitope	Reference
p24(37–52 LAI)	IPMFSALSEGATPQDL	[Buseyne (1993b)]

Table 20: **HIV HLA-B13 Epitopes**

Location	Epitope	Reference
Nef(103–127 PV22)	SQRRQDILDLWIYHTQGYFPDWQNY	[Jassoy (1993)]

Table 21: **HIV HLA-B14 Epitopes**

Location	Epitope	Reference
Anchor/auxiliary positions: 2 (RK), 3 (LYF), 5 (GH), 6 (IL), 9 (L)		[DiBrino (1994a)]
Anchor/auxiliary positions: 2 (RK), 3 (LYF), 5 (RH), 6 (IL), 9 (L)		[Rammensee & communication.(1997)]
p24(41–60 BH10)	SALSEGATPQDLNTMLNTVGGH	[Johnson (1991)]
p24(51–59 LAI)	DLNTMLNTV	[Nixon (1988), McMichael & Walker(1994), Rowland-Jones (1998b)]
p24(166–174 LAI,IIIB)	DRFYKTLRA	[Brander & Walker(1995), Harrer (1996b), Yang (1996), Yang (1997a), Cao (1997), Wilson (1999a)]
p24(173–181)	RAEQASQEV	[Price (1995), Lubaki (1997)]
p24(8–27)	GQMVHQAI SPRTLNAWVKV	[Musey (1997)]
p24(49–57)	PQDLNTMLN	[Lubaki (1997)]
p24(157–178)	PKEPFRDYVDRFYKTLRAEQAS	[Musey (1997)]
RT(481–505 PV22)	AIYLALQDSGLEVNIVTDSQYALGI	[Kalams (1994)]
gp160(575–599 IIIB)	QLQARILAVE <u>RYLKDQQL</u> LGIWGCS	[Jassoy (1992)]
gp160(583–592 PV22)	VE <u>RYLKDQQL</u>	[Jassoy (1993)]
gp160(584–592 HXB2)	E <u>RYLKDQQL</u>	[Johnson (1992), Jassoy (1993), Kalams (1994), Rowland-Jones (1998b), DiBrino (1994a), Hammond (1995), Kalams (1996), Yang (1996), Yang (1997a), Wagner (1998b), Lieberman (1997a), Sipsas (1997), Cao (1997)]

Table 22: **HIV HLA-B15 Epitopes**

Location	Epitope	Reference
gp160(557–565 IIIB)	RAIEAQQHL	[Wilson (1999a)]
Nef(120–128 IIIB)	FFPDWKNYT	[Wilson (1999a)]

Table 23: **HIV HLA-B17 Epitopes**

Location	Epitope	Reference
Anchor residues: 2 (STA), 9 (FW)		[Barber (1997)]
Nef(115–125 BRU)	YHTQGYFPQWQ	[Culmann (1991)]
Nef(117–128 BRU)	TQGYFPDWQNYT	[Culmann (1991)]

Table 24: **HIV HLA-B18 Epitopes**

Location	Epitope	Reference
Anchor residues: 2 (DE), 9 (Y)		[Ogg (1998a)]
p24(161–170 clade B/D)	FRDYVDRFYK	[Ogg (1998a)]
gp160(31–55)	TEKLWVTVYYGVPVWKEATTTLFCA	[Johnson (1994a), Hammond (1995)]
Nef(134–144 LAI)	RYPLTFGWCYK	[Culmann (1991), Couillin (1994), Goulder (1997a)]
Nef(135–143)	YPLTFGWCY	[Culmann (1991), Culmann-Penciolelli (1994)]

Table 25: HIV HLA-B27 Epitopes

Location	Epitope	Reference
Anchor residues: 2 (R) C term (KR)		[Jardetzky (1991), McMichael & Walker(1994)]
Anchor residues: 2 (R) C term (FYILW)		[Rammensee & communication.(1997)]
HLA-B*2702 Anchor/auxiliary positions: 2 (R), 9 (FYILW)		[Rammensee (1995)]
HLA-B*2705 Anchor/auxiliary positions: 2 (R), 9 (LFYMIRHK)		[Rammensee (1995)]
p17(18–27 LAI)	<u>KIRLRPGGKK</u>	[Brander & Walker(1997a), Birk (1998)], D. Lewinsohn pers comm
p17(19–27 LAI)	<u>IRLRPGGKK</u>	[Brander & Walker(1997a)], D. Lewinsohn pers comm
p24(28–47)	EEKAFSPEVIPMFSALEGA	[Musey (1997)]
p24(130–148 BRU)	YKRWILGLNKIVRMYSP	[Dadaglio (1991)]
p24(131–140 HIV-2)	<u>RRWIQLGLQK</u>	[Brander & Walker(1997a)]
p24(131–145)	<u>KRWIILGLNKIVRMY</u>	[Nixon (1988), Bouillot (1989), Meyerhans (1991), Nixon (1990)]
p24(131–142)	<u>KRWIILGLNKIV</u>	[Jardetzky (1991), Carreno (1992)]
p24(131–140 LAI)	<u>KRWIILGLNK</u>	[Buseyne (1993b), Klenerman (1994), McMichael & Walker(1994), Nietfeld (1995), Goulder (1997a), Rowland-Jones (1997), Moss (1995), Phillips (1991), Fan (1997), Wilson (1998a)]
p24(131–139)	KRWIILGLN	[Rowland-Jones (1997)]
p24(131–140)	<u>KRWIIMGNK</u>	[Klenerman (1994), Klenerman (1994), Nowak (1995), Goulder (1997f), Durali (1998), Goulder (1997a)]
p24(28–47)	EEKAFSPEVIPMFSALEGA	[Musey (1997)]
p24(131–146)	<u>KRWIILGLNKIVRMYC</u>	[Bouillot (1989)]
gp160(585–592 LAI)	RYLKDQQL	[Shankar (1996)]
gp160(314–322 LAI)	<u>GRAFVTIGK</u>	[Jardetzky (1991)]
gp160(781–802 HXB2)	IVELLGRRGWEAL <u>KY</u> WWNLLQY	[Lieberman (1992)]
gp160(786–794 LAI)	<u>GRRGWEALK</u>	[McMichael & Walker(1994)], pers comm J. Liebermann
Nef(73–82 LAI)	<u>QVPLRPMTYK</u>	[Culmann(1998)]
Nef(105–114 LAI)	<u>RRQDILDW</u> I	[Goulder (1997e)]
Nef(134–141 LAI)	<u>RYPLTFGW</u>	[Culmann(1998)]

Table 26: HIV HLA-B35 Epitopes

Location	Epitope	Reference
Anchor residues: 2 (P), C term (Y)		[Hill (1992), McMichael & Walker(1994)]
HLA-B*3501 Anchor/auxiliary residues: 2 (P), 9(YFLMI), 10 (Y)		[Rammensee (1995)]
HLA-B*3503 Anchor/auxiliary residues: 2 (P), 9(ML)		[Steinle (1996)]
p17(36–44 LAI)	WASRELER <u>F</u>	[Goulder (1997e), Birk (1998)]
p17(124–132 LAI)	NSSKVSQNY <u>Y</u>	[McMichael & Walker(1994), Rowland-Jones (1995), Birk (1998)]
p24(122–130 LAI)	PPIPVGDI <u>Y</u>	[McMichael & Walker(1994), Rowland-Jones (1995), Lallvani (1997)]
p24(122–130 HIV-2)	NPVPVGN <u>IY</u>	[Rowland-Jones (1995)]
RT(107–115) IIIB	TVLDVGD <u>AY</u>	[Wilson (1996), Wilson (1999a)]
RT(118–127) IIIB	VPLDEDFR <u>KY</u>	[Shiga (1996), Sipsas (1997)]
RT(156–164 SF2)	SPAI <u>FQSSM</u>	[Shiga (1996)]
RT(175–183)	HPDIVI <u>YQY</u>	[Rowland-Jones (1995), McMichael & Walker(1994)]
RT(175–183) IIIB	NPDIVI <u>YQY</u>	[Shiga (1996), Sipsas (1997), Rowland-Jones (1998b)]
RT(293–301 SF2)	IPLTEE <u>AE</u> L	[Shiga (1996)]
RT(432–441 SF2)	EPIVGAET <u>FY</u>	[Shiga (1996)]
gp160(42–52 PV22)	VPVWKEAT <u>TTL</u>	[Cao (1997)]
gp160(78–86 SF2)	DPNPQE <u>VVL</u>	[Shiga (1996)]
gp160(252–260 SF2)	RPIVST <u>QLL</u>	[Shiga (1996)]
gp160(837–856 LAI)	YRAIRH <u>IPRRIRQGLERILL</u>	[Shankar (1996)]
gp160(606–614 LAI)	TAVPWNAS <u>W</u>	[Johnson (1994a), Johnson (1994b), Hammond (1995), Ferris (1996)]
Nef(68–76 SF2)	FPV <u>RPQVPL</u>	[Shiga (1996)]
Nef(73–82 BRU)	QV <u>PLRPMTYK</u>	[Culmann (1991)]
Nef(74–81 LAI)	V <u>PLRPMTY</u>	[McMichael & Walker(1994), Rowland-Jones (1995), Lallvani (1997), Rowland-Jones (1998b)]
Nef(71–81 SF2)	RPQV <u>PLRPMTY</u>	[Shiga (1996)]
Nef(86–100 LAI)	DLSHFLKEKGGLE <u>L</u>	[Buseyne (1993b)]
Nef(135–143 SF2)	Y <u>PLTFGWCF</u>	[Shiga (1996)]
Nef(182–198 LAI)	EWRFDSRLAFHHVARE <u>L</u>	[Hadida (1995)]
Nef(186–193 LAI)	DSRLAF <u>HH</u>	[Hadida (1995)]

Table 27: **HIV HLA-B37 Epitopes**

Location	Epitope	Reference
HLA-B*3701 Anchor/auxiliary residues: 2 (DE), 5 (VI), 8 (FML), 9 (IL)		[Rammensee (1995)]
Nef(117–128 BRU)	TQGYFPDWQNYT	[Culmann (1991)]
Nef(120–128 LAI)	YFPDWQNYT	[Culmann(1998)]

Table 28: **HIV HLA-B38 Epitopes**

Location	Epitope	Reference
Anchor/auxiliary residues: 2 (H), 3 (DE), 9 (FL)		[Falk (1995a)]
HLA-B*3801 Anchor/auxiliary residues: 2 (H), 3 (DE), 9 (FL)		[Rammensee & communication.(1997)]
gp160(52–61 LAI)	LFCASCAKAY	[Shankar (1996)]

Table 29: **HIV HLA-B42 Epitopes**

Location	Epitope	Reference
p17(20–29 IIIB)	RLRPGGKKKY	[Wilson (1996)]
RT(271–279 IIIB)	YPGIKVRQL	[Wilson (1999a)]
Nef(128–137 LAI)	TPGPGVRYPL	[Brander, this pub. p.IV-1]

Table 30: **HIV HLA-B44 Epitopes**

Location	Epitope	Reference
Anchor/auxiliary residues: 2 (E), 3 (I), 4 (P), 6 (V), 9 (Y)		[Rammensee & communication.(1997)]
p24(174–184 LAI)	AEQASQDVKNW	[Brander & Walker(1997b)]
RT(203–212 LAI)	EELRQHLLRW	[van der Burg (1997)]
RT(397–406 LAI)	TW <u>E</u> TWWTE <u>Y</u> W	[van der Burg (1997)]
gp160(31–40)	A <u>E</u> NLW <u>V</u> TV <u>Y</u> <u>Y</u>	[Borrow (1997), Goulder (1997a)]

Table 31: **HIV HLA-B45 Epitopes**

Location	Epitope	Reference
RT(436–445 IIIB)	GVETFYVDGA	[Wilson (1999a)]

Table 32: **HIV HLA-B51 Epitopes**

Location	Epitope	Reference
HLA-B5101 Anchor/auxiliary residues: 2 (APG) 9 (FI)		[Rammensee (1995)]
HLA-B5102 Anchor/auxiliary residues: 2 (PAG), 3 (Y), 9 (IV)		[Rammensee (1995)]
HLA-B5103 Anchor/auxiliary residues: 2 (APG), 3 (Y), 9 (VIF)		[Rammensee (1995)]
HLA-B51 Anchor/auxiliary residues: 2 (P), 3 or 4 (VL), 9 (VLI)		[Connan (1994)]
p24(193–201 IIIB)	<u>N</u> <u>A</u> <u>N</u> <u>P</u> <u>D</u> <u>C</u> <u>K</u> <u>T</u> <u>I</u>	[Wilson (1996), Wilson (1999a)]
RT(42–50)	<u>E</u> <u>K</u> <u>E</u> <u>G</u> <u>K</u> <u>I</u> <u>S</u> <u>K</u> <u>I</u>	[Haas (1998)]
RT(293–301 SF2)	<u>I</u> <u>P</u> <u>L</u> <u>T</u> <u>E</u> <u>E</u> <u>A</u> <u>E</u> <u>L</u>	[Shiga (1996)]
RT(128–135 IIIB)	<u>T</u> <u>A</u> <u>F</u> <u>T</u> <u>I</u> <u>P</u> <u>S</u> <u>I</u>	[Sipsas (1997)]
RT(432–440 SF2)	<u>E</u> <u>P</u> <u>I</u> <u>V</u> <u>G</u> <u>A</u> <u>E</u> <u>T</u> <u>F</u>	[Shiga (1996)]
gp160(78–86 SF2)	<u>D</u> <u>P</u> <u>N</u> <u>P</u> <u>Q</u> <u>E</u> <u>V</u> <u>V</u> <u>L</u>	[Shiga (1996)]
gp160(557–565 IIIB)	<u>R</u> <u>A</u> <u>I</u> <u>E</u> <u>A</u> <u>Q</u> <u>Q</u> <u>H</u> <u>L</u>	[Sipsas (1997), Wilson (1999a)]
Nef(186–194 BRU)	<u>D</u> <u>S</u> <u>R</u> <u>L</u> <u>A</u> <u>F</u> <u>H</u> <u>H</u> <u>V</u>	[Connan (1994)]

Table 33: **HIV HLA-B52 Epitopes**

Location	Epitope	Reference
HLA-B*5201 Anchor/auxiliary residues: 2 (Q), 3 (FYI), 5 (LIV), 8 (IV), 9 (IV)		[Rammensee (1995)]
p24(62–70 LAI)	<u>H</u> <u>Q</u> <u>A</u> <u>A</u> <u>M</u> <u>Q</u> <u>M</u> <u>L</u> <u>K</u>	[Brander & Walker(1997a)], P. Goulder, pers comm
p24(143–150 IIIB)	<u>R</u> <u>M</u> <u>Y</u> <u>S</u> <u>P</u> <u>T</u> <u>S</u> <u>I</u>	[Wilson (1999a)]
Nef(188–196 LAI)	<u>R</u> <u>L</u> <u>A</u> <u>F</u> <u>H</u> <u>H</u> <u>V</u> <u>A</u> <u>R</u>	[Hadida (1995)]
Nef(190–198 LAI)	<u>A</u> <u>F</u> <u>H</u> <u>H</u> <u>V</u> <u>A</u> <u>R</u> <u>E</u> <u>L</u>	[Hadida (1995)]

Table 34: **HIV HLA-B53 Epitopes**

Location	Epitope	Reference
Anchor residues: 2 (P), C term (YFW)		[Hill (1992), McMichael & Walker(1994)]
HLA-B*5301 Anchor/auxiliary residues: 2 (P)		[Rammensee & communication.(1997)]
p24(48–56 HIV-2)	<u>T</u> PYDINQML	[Gotch (1993)]

Table 35: **HIV HLA-B55 Epitopes**

Location	Epitope	Reference
HLA-B*5501 Anchor/auxiliary residues: 2 (P)		[Rammensee & communication.(1997)]
HLA-B*5502 Anchor/auxiliary residues: 2 (P)		[Rammensee & communication.(1997)]
p24(83–92 IIIB)	VH <u>P</u> VHAGPIA	[Sipsas (1997)]
gp160(42–51 PV22)	V <u>P</u> VWKEATTT	[Brander & Walker(1995)]

Table 36: **HIV HLA-B57 Epitopes**

Location	Epitope	Reference
p24(15–23 PV22)	ISPRTLNAW	[Goulder (1996b), Klein (1998)]
p24(30–40 LAI)	KAFSPEVI	[Goulder (1996b)]
p24(108–117)	STLQEIQGW	[Goulder (1996b), Klein (1998)]
p24(176–184 LAI)	QASQEVKNW	[Goulder (1996b)]
RT(244–252 LAI)	IVLPEKDSW	[Klein (1998)]
RT(375–383 LAI)	ITTESIVIV	[Klein (1998)]
RT(244–252)	IVLPEKDSW	[van der Burg (1997)]
Integrase(173–181)	KTAVQMAVF	[Hay(1999)]
Nef(116–125 BRU)	HTQGYFPDWQ	[Culmann (1991)]
Nef(130–143 LAI)	GPGVRYPLTFGWCY	[Goulder (1996b)]
Nef(133–148 LAI)	VRYPLTFGWCYKLVVPV	[Brander & Walker(1997a)],P. Goulder per. comm.

Table 37: **HIV HLA-B58 Epitopes**

Location	Epitope	Reference
Anchor/auxiliary residues: 2(AST), 4 (PEK), 5 (VILMF), 9 (FW)		[Falk (1995b)]
Anchor/auxiliary residues B*5801: 2(AST), 4 (PEK), 5 (VILMF), 9 (FW)		[Rammensee & communication.(1997)]
p24(108–117)	TSTLQEQIGW	[Goulder (1996b), Bertoletti (1998)]
p24(15–23 IIIB)	ISPRTLNAW	[Goulder (1996b)]
p24(47–58)	CTPYDINQMLNC	[Bertoletti(1998)]
p24(108–117)	TSTVEEQIYW	[Bertoletti(1998)]

Table 38: **HIV HLA-B60 Epitopes**

Location	Epitope	Reference
p17(92–101)	IEIKDTKEAL	[Wagner (1998a), Brander, this pub. p.IV-1]
p24(44–52)	SEGATPQDL	[Brander, this pub. p.IV-1]
p24(369–377)	IEELRQHLL	[Brander, this pub. p.IV-1]
gp160(810–819)	QELKNSAVSL	[Brander, this pub. p.IV-1]
Nef(92–101)	KEKGGLEGL	[Brander, this pub. p.IV-1]

Table 39: **HIV HLA-B62 Epitopes**

Location	Epitope	Reference
Anchor/auxiliary residues: 2(QL), 5 (IV), 9 (FY)		[Falk (1995b)]
p17(18–31)	KIRLRPGGKKKYKL	[Lubaki (1997)]
p17(77–85)	SLYNTVATL	[Goulder (1997a)]
p24(48–56 LAI)	TPQDLNTML	[Brander, this pub. p.IV-1]
p24(136–146)	LGLNKIVRMYS	[Lubaki (1997), Goulder (1997a)]

Table 40: **HIV HLA-Bw52 Epitopes**

Location	Epitope	Reference
p24(61–82 BH10)	GHQAAMQMLKETINEEAAEWDR	[Johnson (1991)]

Table 41: **HIV HLA-Bw57 Epitopes**

Location	Epitope	Reference
p24(11–32 BH10)	VHQAISPRTLNAWVKVVEEKAF	[Johnson (1991)]
p24(21–40 BH10)	NAWVKVVEEKAFSPEVIPMFA	[Johnson (1991)]

Table 42: **HIV HLA-Bw60 Epitopes**

Location	Epitope	Reference
RT(192–216 HXB2)	DLEIGQHRTKIEELRQHLLRWGLTT	[Walker (1989)]

Table 43: **HIV HLA-Bw62 Epitopes**

Location	Epitope	Reference
p17(18–42 BH10)	KIRLRPGGKKKYKLVHIVWASRELE	[Johnson (1991)]
p17(20–29 LAI)	RLRPGGKKKY	[McMichael & Walker(1994)]
p24(131–150 SF2)	KRWIILGLNKIVRMYSPTSI	[van Baalen (1993)]
p24(131–152 BH10)	KRWIILGLNKIVRMYSPTSILD	[Johnson (1991)]
p24(136–145 LAI)	LGLNKIVRMY	[McMichael & Walker(1994)]
RT(260–271 IIIB)	LVGKLNWASQIY	[Brander & Walker(1997a)], P. Johnson per. comm.
RT(309–318 LAI)	ILKEPVHGVY	[Johnson (1991), McMichael & Walker(1994)]
Nef(118–127 LAI)	QGYFPDWQNY	[McMichael & Walker(1994)]

Table 44: **HIV HLA-Cw1 Epitopes**

Location	Epitope	Reference
p24(36–43 LAI)	VIPMFSAL	[Goulder (1997c)]

Table 45: **HIV HLA-Cw3 Epitopes**

Location	Epitope	Reference
HLA-Cw*0301 Anchor/auxiliary residues: 3 (VIYLM), 4 (P), 6 (FY), 9 (LFMI)		[Rammensee (1995)]
p24(8–20 IIIB)	GQMVHQAI <u>S</u> PRT <u>L</u>	[Littau (1991)]

Table 46: **HIV HLA-Cw4 Epitopes**

Location	Epitope	Reference
Anchor residues: 2 (YPF), C term (FLM)		[Falk (1994), McMichael & Walker(1994)]
HLA-Cw*0401 Anchor/auxiliary residues: 2 (YPF), 6 (VIL), 9 (LFM)		[Rammensee (1995)]
RT(98–113)	AGLKKKKSVTVLDVGD	[Bernard (1998)]
RT(103–117)	KKSVTVLDVGDAYFS	[Bernard (1998)]
RT(108–122)	VLDVGDAYFSVPLDE	[Bernard (1998)]
gp160(376–383 HXB2R)	<u>S</u> F <u>N</u> CGGE <u>F</u>	[Johnson (1993), Wolinsky (1996), Wilson (1997)]

Table 47: **HIV HLA-Cw8 Epitopes**

Location	Epitope	Reference
p24(173–181)	RAEQASQEV	[Johnson (1991), Rowland-Jones (1998b)]
	Note: Originally reported as B14, but not presented by B14 transfected cells Due to the linkage disequilibrium of Cw8 and B14, the restriction element was unclear	
gp160(156–165 IIIB)	NCSFNISTSI	[Sipsas (1997)]
gp160(239–247 LAI)	CTNVSTVQC	[Sipsas (1997)]
RT(496–505 IIIB)	VTDSQYALGI	[Brander & Walker(1997a), Rowland-Jones (1998b)]
	Note: Originally reported here in 1995 as B14, but not presented by B14 transfected cells	
Nef(82–91 LAI)	KAAVDLSHFL	[Nixon (1999)]