

FIG. 1

Clinical Characteristics of 10 Long-Term Slow Progressors Infected with HIV-1 subtype B

Patient Code	Sex/age ^a (yr)	Year of diagnosis	Presumed date of infection	Mode of transmission	Subtype of HIV-1	HLA class I	KRG supplied (grams/year)	Latest plasma RNA copies (ml)
87-05	M/9	May 1987	Prior to 1985	Blood products	B	A2, 33 B44, 55 C1, 14 ^d	>1,200	26,900
89-17	M/21	Jun 1989	Jun 1988	Bisexual	KSB	<u>A24, 11</u> B39, 56 Cw1, 7	503	162,000
90-05	M/23	Jan 1990	Apr 1989	Homosexual	KSB	A2, 26 B54, 27 Cw1	>1,546	4,500
90-18	M/28	Apr 1990	1989	Heterosexual	KSB	A11, 33 B27, 44 Cw 2, 7	1,084	116,000
90-50	M/20	Nov 1990	Early 1989	Heterosexual	KSB	A2, 24 B7, 27 Cw7, 1	>1,436	104,800
92-13	M/19	Feb 1992	Apr 1991	Blood products	KSB	A2, - B61, 48 Cw3, -	>689	3,765
91-20 ^c	M/30	Apr 1991	Oct 1989	Heterosexual	KSB	A24, - B51, 52 C12, 14	>847	17,800
93-04	M/30	Jan 1993	Apr 1992	Homosexual	KSB	A2, 26 B62, - Cw3, 8	1,073	31,900
93-60	F/26	Sep 1993	Mar 1993	Heterosexual	KSB	A24, 11 B52, 62 C4, 12	>948	5,750
96-51	M/28	Mar 1996	Jun to Dec 1995	Homosexual	KSB	A2, - B51, 61 C10, 14	1,337	29,200

^aAt the time of diagnosis for HIV-1 infection.^b> means there was additional intake of KRG by personal purchase.^cTwo blood recipients who got transfused with blood obtained from 91-20 were confirmed with HIV-1 infection after they were transfused in October 1989.^dBold and underlined characters denote protective and hazardous (in combination with TAP2.1 or TAP2.3) HLA allele, respectively [34].HLA class I data were reproduced from Ref. 9. Among 31 patients who had lived more than 10 years after initial HIV-1 diagnosis without antiretroviral therapy, all 5 patients with HLA-A11 belonged to long-term slow progressors or long-term nonprogressors ($P < 0.05$) [9]. Abbreviations: Adm., admission to hospital; KSB, Korean subtype B of HIV-1 [15, 18, 20].

FIG. 2

Frequency of grossly deleted *nef* gene (*gΔnef*) in the 10 Long-Term Slow Progressors.

Patient code	Date of the first <i>gΔnef</i>	KRG-months* on first <i>gΔnef</i>	No. of samples with only wild type prior to detection of <i>gΔnef</i>	No. of samples with <i>gΔnef</i> /no. of sample tested (%)	No. of <i>gΔnef</i> /no. of <i>nef</i> genes determined (%)
87-05	-	No. on 136	Unavailable	0/11 (0)	0/27 (0)
89-17	Jul 1993	19	Unavailable	3/7 (43)	8/36 (22)
90-05	Aug 2002	128	11	6/21 (29)	15/83 (17)
90-18	Oct 1993	67	6	6/15 (40)	10/39 (26)
90-50	Nov 2001	105	3	7/14 (50)	12/49 (25)
91-20	Nov 1994	36	Unavailable	7/14 (50)	11/42 (26)
92-13	Dec 2002	115	10	5/16 (36)	7/39 (18)
93-04	Aug 2004	47	11	2/16 (13)	2/62 (3)
93-60	Jun 1999	31	1	6/13 (46)	17/45 (38)
96-51	Apr 2002	69	2	5/10 (50)	8/52 (15)
Total		Median 67	44	47/137 (34.3)	90/479 (18.8)

*Months from the start of Korean red ginseng (KRG) treatment to first *gΔnef*.

FIG. 3

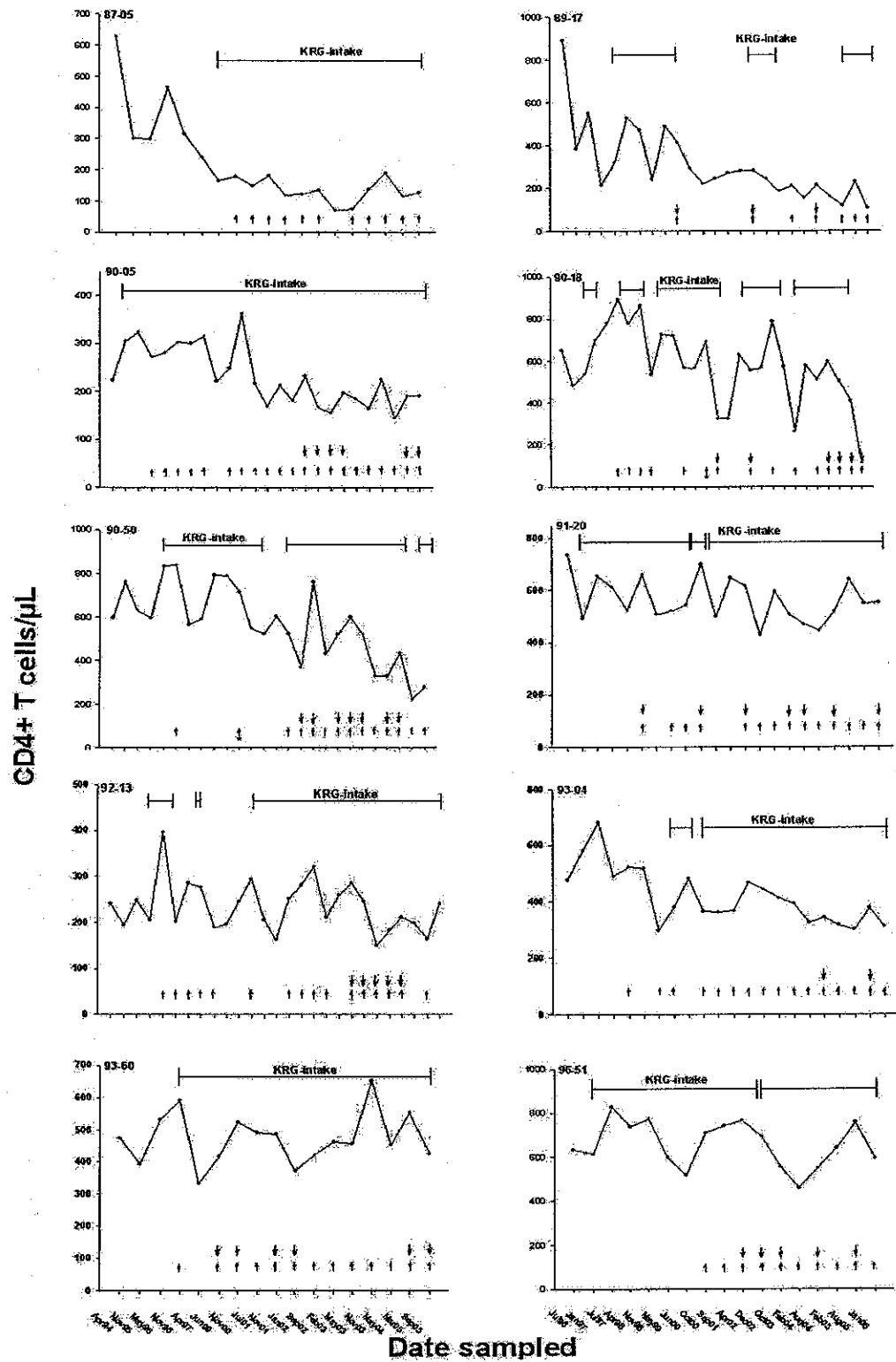


FIG. 4A

Characteristics of Gross Deletions in the *nef* Gene (Δ nef) in 10 Long-Term Slow Progressors.

Patient code	Day of sampling	No. of bands by PCR	No. of PCR reaction with Δ nef ^b	Size of Δ (bp) ^c	Beginning nt. relative to HIV-1 NL4-3	Months of KRG therapy on first Δ nef ^d	Δ nef outside <i>nef</i> gene (bp)	A representative GenBank accession No.
89-17	7/6/93	2	1	230	8,844	19		AY363362
	7/6/93	2	2	412	8,959	58		DQ121683
	10/23/96	2	3	366	9,033	62		DQ121685
	3/30/00	2	2	575	8,830	103		DQ121686
	8/20/02	One	2	348	8,917	128		DQ121718
90-05	1/18/03	2	4	230	8,867	132		AY260799
	3/24/03	2	2	346	8,756	134	Δ 31Env	DQ121723
	6/12/03	One	4	199	8,875	137		DQ121724
	7/14/03	One & 2	2	530	8,697	162	Δ 91Env	DQ400934
	10/28/03	2	1	124	8,982	165		DQ400937
90-18	7/6/97	2	2	64116	8,934 + 9,015	55		AY221661
	1/19/99	One	1	735	8,721	66	Δ 66Env & Δ 49LTR	AY260802
	1/19/99	2	2	ND	ND	ND		ND
	10/7/02	One	2	498e	8,847	97		AY260801
	1/28/03	One	1	309	8,898	100		DQ121742
	10/20/03	One	1	296	8,787	109	Δ Env	DQ339428
	5/19/03	One	1	393	8,886	104		DQ121744

FIG. 4B

90-50	11/9/01	One	1	553	8,781	74	Δ 6LTR	DQ400939
	6/21/02	One	2	163	9,201	81		DQ121778
	3/24/03	One	2	483	8,814	101		DQ121780
	6/4/03	3	2	561	8,783	104	Δ 4Env	DQ121781
	9/2/03	2	2	477	8,895	107		DQ121782
	8/17/04	2	1	532	8,812	118		DQ121786
	1/6/05	2	2	588	8,836	124	Δ 15 LTR	DQ121788
91-20	12/14/94	One	2	180	9,081	36		DQ121828
	7/14/97	2	1	212	8,995	67		DQ121831
	12/4/00	One	2	370	8,989	109		DQ121832
	8/20/02	One	1	368	8,787	129	Δ Env	DQ339434
	1/20/03	2	2	ND	ND	134		ND
	8/7/03	2	1	323	8,751	141	Δ 36Env	DQ121840
	7/14/05	2	2	182	9,040	166		DQ400942
92-13	12/12/02	5	1	373 & 493	9,075 & 8,904	115		AY221690-91
	3/21/03	2	1	406	8,862	118		AY363319
	6/12/03	1	1	257	9,087	121		AY363321
	6/12/03	2	1	140	9,049	121		AY363322
	3/10/04	2	2	299	9,047	130		AY384765
	5/03/04	2	1	373	8,792	132		Not Yet
93-04	8/25/04	2	1	ND	ND	47		ND
	8/23/05	2	1	473	8,839	101		DQ400944

FIG. 4C

93-60	6/17/99	One	1	410	8,887	31		AF462781
	11/27/00	2	1	94	9,024	48		AF462783
	11/27/00	2	1	334	9,117	48	Δ 66LTR	AF462784
	11/14/01	One	3	ND	ND	60		ND
	1/15/02	2	4	ND	ND	62		ND
	3/21/03	2	3	544	8,701	100	Δ 86Eav	DQ121924
	9/23/03	2	4	543	8,703	106	Δ 84Eav	DQ400947
96-51	4/4/02	One	2	701	8,707	66	Δ 79Eav	DQ121943
	12/18/02	One	1	ND	ND	74		ND
	10/20/03	One	2	642	8,749	84	Δ 38Eav	DQ121946
	8/23/04	2	2	347	8,905	94		DQ121951
	8/23/05	2	1	187	9,093	106		DQ400949

^aOne and 2 denote single short band (gAnef) only and wild type together with gAnef, respectively.

^bNo. of PCR product with gAnef out of 4 PCR reactions.

^cDeletion (base pair).

^dMonths from start of KRG therapy to first detection of gAnef.

^e+ denotes deletions at 2 locations in a nef gene.

^f Δ (deletion) of 66 base pairs in the *env* gene and 49 base pairs in the 3'LTR.

ND, not determined.

FIG. 5A

Pt ID Consensus	MGCKVSKRSVYGRPTVREPMRAEPA70NVRREPAADGVCAVSDLEKHCAITSSNTAANNAACAWLEADEEEE-VGFPVRPOVPLRPMTYKGAVDLSHFLKKGGLGL	Date
87-05 AF238268	A.....E.....A.....A.....Y.....A.....DL.....A.....G.....	Oct 94
87-05 SEQ10-4	IS..#.C.WAR..A.K..IE.....A.....K.....A.....Y.....DL.....A.....G.....	Oct 94
87-05 AF238269	A.....E.....A.....A.....Y.....DL.....D.....	Apr 97
87-05 DQ400951	A.....E.....A.....A.....RY.....L.....PDL.....A.....	Oct 05
89-17 DQ121682	FP..D..I.....TG..REGR..H.....E.....OR.....T.....S.....S.....L.....	Jul 93
89-17 DQ121683	FP..D..I.....TG..REGR..H.....E.....OR.....I.....S.....	Jul 93
89-17 AY363962	FP..D..I.....	Jul 93
89-17 DQ121685	FP..D..I.....TE..REGR..H.....E.....OR.....I.....S.....	Oct 96
89-17 DQ121686	FP..D.....	Mar 00
90-05 DQ121711	P..N.....A.....E.....OR.....I.....S.....A..L.....	Oct 93
90-05 AF482710	L.....PR..N..IK..I.....E.....EK..R.....GRR.....T.....N.....H.....IT.....A..L.....R.....	Oct 93
90-05 DQ121718	P..N..I.....A.....EK..R.....GR.....	Aug 02
90-05 AY260799	P..N..I.....A.....	Jan 03
90-05 DQ121723	.....	Mar 03
90-05 DQ121724	P..N.....A.....E.....	Jun 03
90-05 DQ400934	.....	Jul 05
90-05 DQ400937	P..N.....I.....A.....E.....OR.....I.....TV.....	Oct 05
90-05 DQ400936	P..N..I.....A.....E.....OR.....I.....TV..V.....E.....A.....	Oct 05
90-18 AY221660	AP..N.....I.....A.....E.....OR.....I.....S.....L.....	Jun 93
90-18 AY221661	AP..N.....I.....A.....E.....OR.....I.....	Jul 97
90-18 AY260892	.....	Jan 99
90-18 AY260801	AP..N..I.....	Oct 02
90-18 DQ121742	AP..N..I.....I..C.....I..E.....	Jan 03
90-18 DQ121744	AP..N.....I.....A.....V.....	May 03
90-18 DQ339428	.....	Oct 03
90-50 AF482738	P..N..I.....I.....A.....E.....OR.....I.....S..T.....I.....A.....	Sep 93
90-50 DQ400939	.....	Nov 01
90-50 DQ121778	P..N..I.....I.....A.....E.....A.....OR.....I.....T.....S.....A..L.....R.....	Jun 02
90-50 DQ121780	.....	Mar 03
90-50 DQ121781	.....	Jun 03
90-50 DQ121782	A.....P..N..I.....I.....A.....E.....	Sep 03
90-50 DQ121786	.....	Aug 04
90-50 DQ121788	P..N..I.....	Jan 05
90-50 DQ121787	P..N..I.....I.....A.....E.....OR.....VR.....S..T.....T.....A.....	Jan 05
91-20 DQ121827	P..N..I.....A.....E.....OR.....T.....S.....S..L.....	Dec 94
91-20 DQ121828	P..N..I.....A.....E.....OR.....T.....S.....S..L.....	Dec 94
91-20 DQ121881	P..N..I.....A.....E.....A.....OR.....T.....S.....	Jul 97
91-20 DQ121882	P..N..I.....A.....E.....A.....OR.....T.....S.....	Dec 00
91-20 DQ339434	.....	Aug 02
91-20 DQ121840	.....	Aug 03
91-20 DQ400942	P..N..I.....A.....E.....OR.....T.....S.....S.....	Jul 05
92-13 AY260774	P..N..I.....I.....A.....E.....OR.....I.....S.....L.....D.....	Jul 93
92-13 AY221690	P..DAL.....TG..TE.....E.....OR.....TG.....S.....F.....	Dec 02
92-13 AY221691	P..DAL.....TG..TE.....E.....O.....	Dec 02
92-13 AY363919	P..DAL..D.....TG..TE.....	Mar 03

FIG. 5B

92-13 AY363321	P..DAI.....T..TE-----E.....QR.....TN..PSY..T.....P.....I.....F..I.....N.....	Jun 03
92-13 AY363322	P..DA.....T..TE-----E.....QR.....TG..S.....	Jun 03
92-13 AY584765	P..N.I.....T..E-----A.....QR.....TN..PS..T.....F.....	Oct 03
92-13 SEQ1659s	.....	May 04
93-04 DQ121906	R.P..D.I..K.K.T..A-----E.....QR.....TN..S..V.....E.....F.....	May 95
93-04 AF462778	R.P..DNI..K.K.T..A-----E.....QR.....T..S..V.....E.....F.....	Dec 00
93-04 DQ400944	RIP..DDI.....	Jul 05
93-60 SEQ88-10	FP..D..IG.....TG..RER--N..E.....QR.....T..S.....I.....L.....R.....	Nov 96
93-60 AF462782	C.....FP..D..I.....TG..RER--N..E.....QR.....T..S.....I.....L.....R.....	Jun 99
93-60 AF462781	FP..D..I.....TG..RER--N..E.....	Jun 99
93-60 AF462783	C.....FP..D..I.....TG..RER--N..E.....QR.....T..S.....G..I.....I.....	Nov 00
93-60 AF462784	I...C....FPR#D..IK.....TN..RER--N..EK..R.....QR.....T..S.....*.....S..I.....R..L.....R.....	Nov 00
93-60 DQ121924	.....	Feb 05
93-60 DQ400947	.....	Sep 05
93-60 DQ400948	C..H..FP..D..I.....TG..RER--N..E.....QR.....T..S.....I.....L.....R.....	Sep 05
96-51 DQ121943	.....	Apr 02
96-51 DQ121946	.....	Oct 03
96-51 DQ121951	G.P..D..I.....TGT-----E...A...ADR-----	Aug 04
96-51 DQ400949	G.P..DAI...I..TGT-----E...A...ADR.....IN..S.....F.....	Aug 05
96-51 SEQ2021	GIP..DSI.....TGT-----E...A...ADR.....IN..S.....F.....	Aug 05
Pl ID Consensus	MGCKWSKRSYVGVPTVPRMRRRAEPATDVRREPADGVCAVSROLKHCALTSSNTAANNAACANLEAQEEFVGFVVRPQVPLRPMTYKAYDLSFFLKEKGLGL	Date

FIG. 5C

PL ID Consensus	IYSKRODILDLYVYHTOGYFPDQNYTPGQIRYPLTFQWCEKLVPEPEKVEEANEENSSLHPMSLNGMEDPEREVLQNFDSRLAFHHVARELHPEYKNC	Date
87-05 AF238268	VH.....L...G.....K.....R.S.....I.....M.K.....D.....	Oct 84
87-05 SEOL10-4	VH.....G...K.....R.....K.....R.S.....KI.....M.K.....D.....	Oct 94
87-05 AF238269	V.....E.....K.....I.....K...K.K.....D.....	Apr 97
87-05 DQ400951	.H.....H...FL...G...V.....K.I.VT.R.T...I.Q.I.....M.K.....D.....	Oct 05
89-17 DQ121682	T.F.....I...T...C...IN...D...G...E.....M...K...F...	Jul 93
89-17 DQ121683	T.F.....I...T...C...IN...D...G...E.....M...K...F...	Jul 93
89-17 AY363362	T.F.....I...T...C...IN...D...G...E.....M...K...F...	Jul 93
89-17 DQ121685	T.F.....I...T...C...IN...D...G...E.....M...K...F...	Oct 96
89-17 DQ121686	T.F.....I...T...C...IN...D...G...E.....M...K...F...	Mar 00
90-05 DQ121711	V.....I...TV...C...IN...D...V.K.....M...K...D...	Oct 93
90-05 AF462710	V.....*.....R.RT...Rk.....I...TVR...C...N...ID...VQR.....M.Q.K...D...	Oct 93
90-05 DQ121718	C...N...ID...K...V.K...H...M...RL...D...	Aug 02
90-05 AY260799	F.....D.I...TV...D.C...IN...D...K...V.K...H...M...K...FF...	Jan 03
90-05 DQ121723	F.....I...VTV...C...IN...D...K...V.K...H...M...K...F...	Mar 03
90-05 DQ121724	V.....I...F.....I...VTV...C...IN...D...G...V.K...H...Y...H...KL...D...	Jun 03
90-05 DQ400934	VTV...C...IN...D...K...V.K...H...Y...K...F...	Jul 05
90-05 DQ400937	I...F.....S.....QI...VTV...C...P.IN...D...KA...V.K...H...Y...K...D...	Oct 05
90-05 DQ400936	I...F.....I...VTV...C...IN...D...K...V.K...H...Y...K...D...	Oct 05
90-18 AY221660	.H.R.....K.....E...TV...NQ...D...V.K.....M...K...F...	Jun 93
90-18 AY221661	V.....E...TV...N...D...V.K...H...I...M...K...D...	Jul 97
90-18 AY260802	M...K...D...	Jan 99
90-18 AY260801	M...K...D...	Oct 02
90-18 DQ121742	K...E...TV...N...D...G...V.K...L...M...K...F.D...	Jan 03
90-18 DQ121744	N...D...V.K...H...I...M...K...F...	May 03
90-18 DQ338428	H-R.....Y.....	Oct 03
90-50 AF462739	L.....T.F.....I...TV...N...N...V.K.....M...K...F.D...	Sep 93
90-50 DQ400939	K.....H...K...F.D...	Nov 01
90-50 DQ121778	L.....T.F.....M...K...F...	Jun 02
90-50 DQ121780	D...K...V.K...M...K...F...	Mar 03
90-50 DQ121781	M...K...F.D...	Jun 03
90-50 DQ121782	K...F.D...	Sep 03
90-50 DQ121786	K...F.D...	Aug 04
90-50 DQ121788	M...K...D...	Jan 05
90-50 DQ121787	V.....T.F.....D.D.I...TA...NQ...D...K...V.K...N...K...F.D...	Jan 05
91-20 DQ121827	V.....F.....T.F.....TV...C...N...D...V.K...M...K...F...	Dec 94
91-20 DQ121828	C...N...D...V...M...K...F...	Dec 94
91-20 DQ121831	TV...C...N...D...G...V.K...M...K...D...	Jul 97
91-20 DQ121832	M...K...D...	Dec 00
91-20 DQ338434	S.....T.....	Aug 02
91-20 DQ121840	V.....F.....T.F.....TV...C...N...D...G...V...M...K...D...	Aug 03
91-20 DQ400942	TV...C...N...D...G...V...M...K...D...	Jul 05
92-13 AY260774	.H.....T.....I...TV...C...N...D...K...V.K...M...K...D...	Jul 93
92-13 AY221690	D...M...K...F...	Dec 02
92-13 AY221691	D...M...K...F...	Dec 02
92-13 AY363319	D...M...K...F...	Mar 03
92-13 AY363321	D...M...K...F...	Jun 03
92-13 AY363322	I...TV...C...LHQ...D...M...K...F...	Jun 03
92-13 AY584765	I.....D...	Oct 03

FIG. 5D

92-13 SEQ1659s	-----I...T...C...L...D...M...K...M...D.	May 04
93-04 DQ121806	...Q.....F.....N...Q...TV...C...N...D...G...E.....M...K.....	May 95
93-04 AF462778	-----N...Q...K...TV...C...N...D...G...E.....M...K.....	Dec 90
93-04 DQ400944	-----E.....L...K...D.	Jul 05
93-60 SEQ08-10	S.....T...F.....T...C...IN...D...G...E.....M...K...F.D.	Nov 96
93-60 AF462782	.H.....R...T...F.....T...C...IN...D...G...E.....M...K...F.D.	Jun 99
93-60 AF462781	.H.....R...T...F.....T...C...IN...D...G...E.....M...K...F.D.	Jun 99
93-60 AF462783	-----I.....T...F.....R...T...C...IN...D...G...E.....M...K...F.D.	Nov 00
93-60 AF462784	-----	Nov 00
93-60 DQ121924	-----T...C...IN...D...G...E.....Y...M...K...F.D.	Feb 05
93-60 DQ400947	-----T...C...IN...D...G...E.....Y...M...K...F.D.	Sep 05
93-60 DQ400948	-----I.....T...F.....R...T...C...IN...D...G...V.....Y...M...K...F.D.	Sep 05
96-51 DQ121843	-----	Apr 02
96-51 DQ121846	-----D.	Oct 03
96-51 DQ121851	-----V...C...N...D...G...E.....K...D.	Aug 04
96-51 DQ400949	-----N...D...K...Y...K.....K...D.	Aug 05
96-51 SEQ2031	F...H...Y.....Q...TV...C...N...D...K...Y...K.....K...D.	Aug 05
PL ID Consensus	IYSKRRQDILDLYVYHTQGYFDWONYTPQPGIRYPLTFQWCKLYPVEPEKYEEANEENSLHPSLHGMEDPEREYLBQRFDSRLAFHHVARELHPEYYKNC	Date

FIG. 6

