

Multi-Drug Resistant NNRTI Infectious Clones

List of reagents with clone information and amino acid mutations.

ARP Cat #	Sample	GenBank	NNRTI-Resistance Mutations		Major NRTI-Resistance Mutations	Other Mutations
			Major	Accessory		
12225	1579	JQ814893	M230L	E138G, H221Y, F227L	M41L, L210W, T215Y	K122E, D177E, I178L, R211K, V245M, I293V
12227	5244	JQ814886	K101P, K103N		M41L, T215Y	A98S, K102Q, D123E, K166R, D177E, D192N, R211K, V245K, K277R, R284K, T286A, E297K
12229	5485	JQ814884	L100I, K103N	H221Y	M41L, L74V, M184V, T215Y	R83K, D177E, T200A, R211Q, K281R, R284K, I293V, E297A
12231	7066	JQ814890	K103N, Y181C	V179F	M41L, T215F	K49R, K82R, A98S, D177E, G196E, Q207K, R211A, L228R, A272P, I293V, K311R
12233	5735	JQ814888	K101E, Y181V		K70R, M184V, T215F	T27S, E28K, K32E, V60I, T69N, R83K, V179I, T200A, Q207D, L228R, V245E, T286A, E297K
12235	1833	JQ814891	K101E, Y181C, G190A	A98G	M41L, D67N, T69D, L74I, L210W, T215Y	T39E, E44D, V118I, K122E, I135T, G196E, E203K, R211K, A272S, V276T, K277R, Q278E, L283I, I293V, E297K
12237	16182	JQ814889	Y181C, G190A	V106I, H221Y		V35I, S68G, A98S, D121E, K122E, I135V, R211K, F214L, V245E, D250E, A272P, E297K
12239	5375	JQ814892	K101E, E138K, Y181C	A98G	M41L, T215D	K122E, I135T, S162Y, T200A, L210F, P243T, V245E, D250E, A272P, I274V, Q278H, K281R, T286A, A288S, K311R
12241	25641	JQ814887	K101E, G190S	E138G		V35M, R211K, V245E, S251I
12243	2100	JQ814885	L100I, M230L	V179D,	M41L, D67G, L74I, M184V, T215Y	V35I, K103R, K122E, I202V, R211K, T240K

Encompasses positions 24 to 313 which is the pNLFB RT insert. Mutations were defined as differences from the consensus wildtype subtype B sequence. NNRTI and NRTI mutations are defined according to the list of major and minor NRTI and NNRTI-resistance mutations provided at: <http://hivdb.stanford.edu/DR/>. Of note although K103R alone does not decrease NNRTI susceptibility, it has been shown that K103R + V179D decrease NVP and EFV susceptibility about 15-fold (Parkin N, AAC 2006).

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Donated by Dr. Robert Shafer, Stanford University

Table information adapted from [Balamane et al. Antimicrob Agents Chemother. 2012 Aug 56\(8\): 4522-4524](#)

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List of reagents with amino acid mutations, treatment history, and resistance data.

Sample	NNRTI resistance mutation(s)		Treatment history		Resistance (n-fold)				
	Major	Accessory	NNRTI(s)	Duration (mo)	NVP	EFV	ETR	RPV	RC (%)
5244	101P, 103N		EFV	13	>200	>200	5.8	92	56
5485	100I, 103N	221Y	EFV	11	>200	>200	6.8	6.3	NA
7066	103N, 181C	179F	EFV	14	>200	90	8.8	2.3	83
5735	101E, 181V		NVP	31	>200	2.1	27	24	78
1833	101E, 181C, 190A	98G	NVP, EFV	19	>200	>200	15	22	51
16182	181C, 190A	106I, 221Y	NVP	61	>200	26	6	3.5	117
5375	101E, 138K, 181C	98G	NVP, DLV	25	>200	3.6	10	9.2	41
25641	101E, 190S	138G	EFV, NVP	26	>200	>200	3.2	2.6	61
2100	100I, 230L	179D	NVP, DLV	15	>200	>200	95	13	69
1579	230L	138G, 221Y, 227L	DLV, NVP	28	>200	15	21	18	41

Abbreviations: EFV, efavirenz; NVP, nevirapine; DLV, delavirdine; ETR, etravirine; RPV, rilpivirine; RC, replication capacity (percentage of that of a wild-type control virus) as determined by Monogram; NA, not applicable. TCID₅₀, 50% tissue culture infective dose after 10 days in MT2 cells. Resistance levels are n-fold differences from those of wild-type control virus NL43. For NVP, EFV, ETR, and RPV, the NL43 EC₅₀s were 0.1 μM, 0.002 μM, 0.005 μM, and 0.0009 μM, respectively. Resistance levels of >10-fold are in bold.