HIV-1 Genotypic Antiretroviral Resistance Test

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Last Name	Patient	**First Name**	Unknown
Clinic	UNKNOWN	**Physician**	Unknown
MR Number	123456	**Accession Number**	123456 (49138)
Collection Date	07/17/2010	**Received Date**	07/17/2010
Date Entered	07/17/2010	**File Name**	

Sequence includes PR codons: 1 - 99
Sequence includes RT codons: 1 - 299
There are no insertions or deletions
Subtype: B
No. previous patient sequences: **PR:** 0 **RT:** 0

PI Major Resistance Mutations V82AV
PI Minor Resistance Mutations None
Other Mutations I64V, I72M

Protease Inhibitors

atazanavir/r (ATV/r)	Low-level resistance
darunavir/r (DRV/r)	Susceptible
fosamprenavir/r (FPV/r)	Potential low-level resistance
indinavir/r (IDV/r)	Intermediate resistance
lopinavir/r (LPV/r)	Low-level resistance
nelfinavir (NFV)	Intermediate resistance
saquinavir/r (SQV/r)	Potential low-level resistance
tipranavir/r (TPV/r)	Susceptible

NRTI Resistance Mutations D67N, K70R, M184IMV, K219Q
NNRTI Resistance Mutations V90IV, K103N, K238N
Other Mutations V60I, K102R, D123E, T139KR, S162NS, K166KR, I178M, G196E, D237DN, A272S, T286A, E297K

Nucleoside RTI

lamivudine (3TC)	High-level resistance
abacavir (ABC)	Low-level resistance
zidovudine (AZT)	Intermediate resistance
stavudine (D4T)	Intermediate resistance
didanosine (DDI)	Potential low-level resistance
emtricitabine (FTC)	High-level resistance
tenofovir (TDF)	Potential low-level resistance

Non-Nucleoside RTI

delavirdine (DLV)	High-level resistance
efavirenz (EFV)	High-level resistance
etravirine (ETR)	Potential low-level resistance
nevirapine (NVP)	High-level resistance

PR Comments

+ V82A reduces susceptibility to IDV/r and LPV/r. With other mutations it is associated with reduced susceptibility to NFV, ATV/r, SQV/r, and FPV/r.

RT Comments

+ K70R causes low-level AZT, d4T, and possibly TDF resistance.
+ K219Q/E decrease AZT and probably d4T susceptibility when present with K70R or T215Y/F but have little if any effect on the remaining NRTIs.
+ M184V/I cause high-level in vitro resistance to 3TC and FTC and low-level in vitro resistance to ddI and ABC. M184V/I increase susceptibility to AZT, TDF, and d4T.
+ K103N causes high-level resistance to NVP, DLV, and EFV. By itself it has no effect on ETR susceptibility. However, it has a synergistic effect with L100I and possibly K101P on ETR susceptibility.
+ V90I is a common polymorphism that was weakly associated with decreased ETR response in the DUET studies. However, it has minimal if any effect on NNRTI susceptibility.
+ D67N contributes some degree of resistance to each of the NRTIs except 3TC and FTC. It usually occurs with mutations at positions 70 or 215.
+ K238T is an NNRTI-selected mutations that usually occur in combination with K103N in which case it causes high-level resistance to NVP, EFV, and DLV. Its effect on ETR is not known. K238N is a rarer NNRTI-selected mutation at this position. Its phenotypic effect is not known.
+ The following 1 of the 13 etravirine DUET study mutations were present: V90I (Katlama C et al, IAS 2007).

PR Mutation Scores

	ATV/r	DRV/r	FPV/r	IDV/r	LPV/r	NFV	SQV/r	TPV/r
V82AV	15	0	10	35	25	35	10	6
Total:	15	0	10	35	25	35	10	6

RT Mutation Scores

	3TC	ABC	AZT	D4T	DDI	FTC	TDF	DLV	EFV	ETR	NVP
D67N	0	8	15	12	8	0	5	0	0	0	0
K70R	0	0	18	10	0	0	8	0	0	0	0
K103N	0	0	0	0	0	0	0	60	60	5	60
M184IMV	60	12	0	0	5	60	0	0	0	0	0
K219Q	0	0	15	10	0	0	0	0	0	0	0
K238N	0	0	0	0	0	0	0	30	15	5	30
Total:	60	20	48	32	13	60	13	90	75	10	90

The Genotypic Antiretroviral Resistance Test reports mutations in HIV-1 protease and RT. Mutations are defined as differences from the wildtype consensus B reference sequence. The interpretation is based on published data in the scientific and medical literature linking mutations and combinations of mutations to phenotypic and clinical drug resistance. The report should be used in conjunction with a patient's clinical history (including past treatments) and with a solid understanding of the principles of antiretroviral treatment (http://www.aidsinfo.nih.gov/guidelines/). A more detailed description of the test interpretation, which includes the consensus B protease and RT sequence, all of the mutation scores, all of the mutation comments, and updates can be found on the Stanford HIV Drug Resistance Database http://hivdb.stanford.edu/pages/asi/releaseNotes/.

Laboratory test performed by Stanford Virology Laboratory at Stanford Hospital, 300 Pasteur Dr., Stanford, CA 94305. This test was developed and its performance characteristics determined by the Stanford Clinical Micro/Viro lab. It has not been cleared or approved by the U.S. Food and Drug Administration. Such approval is not required for tests validated by the performing laboratory.