



## Antiretroviral Drug Resistance Report

**Micropathology Lab Number:** 123456

**Date:** 25/12/22

**Your Patient/Lab Number:** M123456

The following report summarizes apparent antiretroviral drug resistance. It is based upon an analysis\* of protease and reverse transcriptase gene sequences of the HIV-1 virus amplified from the supplied specimen (see laboratory numbers above). Additional information detailing the HIV-1 subtype and a quality assessment of the sequence data is also included. The report utilises the following abbreviations: B,D,H,V,N = Standard IUPAC codes for ambiguous nucleotides, PR = Protease, PI = Protease Inhibitor, RT = Reverse Transcriptase, RTI = Reverse Transcriptase Inhibitor, TAMs = Thymidine Analogue-associated Mutations, SDRMs = Surveillance Drug Resistance Mutations.

\* Analysis performed using the Stanford Genotypic Resistance Interpretation Algorithm Version 9.1.

### SUMMARY DATA

Sequence includes PR:	codons 1 - 99
Sequence includes RT:	codons 1 - 351
Subtype:	C (5.19%)
PR SDRMs:	<b>I54L</b>
RT SDRMs:	<b>D67N, T69D, K70R, Y181I</b>
Other DRMs:	<b>K20T</b>

### SEQUENCE QUALITY ASSESSMENT

OK

HIV PRRT Example Report - Version: 1.0. Index: S - 2353. Printed: 04-Jan-2023 13:42

## **DRUG RESISTANCE INTERPRETATION**

### **PR**

PI Major Mutations: **I54L**  
PI Accessory Mutations: **K20T**  
PR Other Mutations: L10V, T12S, I15V, G17D, Q18L, L19V, E35D, M36I, N37S, R57K, L63P, H69K, I72IV, V77I, L89M, I93L

### **Protease Inhibitors**

atazanavir/r (ATV/r)	Low-Level Resistance
darunavir/r (DRV/r)	Low-Level Resistance
fosamprenavir/r (FPV/r)	High-Level Resistance
indinavir/r (IDV/r)	Low-Level Resistance
lopinavir/r (LPV/r)	Low-Level Resistance
nelfinavir (NFV)	Intermediate Resistance
saquinavir/r (SQV/r)	Low-Level Resistance
tipranavir/r (TPV/r)	Susceptible

### **PR Comments**

#### **Major**

- I54M/L are non-polymorphic mutations selected primarily by FPV and DRV. I54M/L reduce susceptibility to LPV, ATV, and DRV.

#### Accessory

- K20T is a non-polymorphic accessory PI-selected mutation associated with reduced susceptibility to ATV and LPV.

#### Other

- L10I/V are polymorphic, PI-selected accessory mutations that increase the replication of viruses with other PI-resistance mutations.
- There is evidence for low-level DRV resistance. If DRV is administered it should be used twice daily.

### **RT**

NRTI Mutations: **D67N, T69D, K70KNRS**  
NNRTI Mutations: **Y181I**  
RT Other Mutations: P4S, V35T, T39E, V90VI, K122E, I135M, I167IF, K173A, Q174K, D177E, I178L, V179I, T200A, Q207N, R211K, K219H, L228H, V245Q, L283I, V292I, I293V, V317A, Q334E, G335D

### **Nucleoside Reverse Transcriptase Inhibitors**

abacavir (ABC)	Low-Level Resistance
zidovudine (AZT)	Intermediate Resistance
stavudine (D4T)	Intermediate Resistance
didanosine (DDI)	Intermediate Resistance
emtricitabine (FTC)	Potential Low-Level Resistance
lamivudine (3TC)	Potential Low-Level Resistance
tenofovir (TDF)	Low-Level Resistance

### **Non-nucleoside Reverse Transcriptase Inhibitors**

doravirine (DOR)	Low-Level Resistance
efavirenz (EFV)	Intermediate Resistance
etravirine (ETR)	High-Level Resistance
nevirapine (NVP)	High-Level Resistance
rilpivirine (RPV)	High-Level Resistance

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## RT comments

### NRTI

- D67N is a non-polymorphic TAM associated with low-level resistance to AZT.
- T69D is a nonpolymorphic mutation selected by early NRTIs that does not appear to reduce AZT, ABC, or TDF susceptibility.
- K70/E/Q/N/T/S/G cause low-level resistance to ABC and TDF.
- K70R is a TAM that confers intermediate resistance to AZT and contributes to reduced ABC and TDF susceptibility in combination with other TAMs.

### NNRTI

- Y181I/V are 2-base pair non-polymorphic mutations selected by NVP and ETR. They cause high-level resistance to NVP, ETR, and RPV but not EFV. Their effects on DOR have not been well-characterized.

### Other

- V90I is a polymorphic accessory mutation weakly selected by each of the NNRTIs. It is associated with minimal, if any, detectable reduction in NNRTI susceptibility.
- V179I is a polymorphic mutation that is frequently selected in persons receiving ETR and RPV. However, it has little, if any, direct effect on NNRTI susceptibility.
- K219E/Q/N/R are accessory TAMs that usually occur in combination with multiple other TAMs. K219W is an uncommon NRTI-selected mutation. K219H is an unusual mutation at this position.