

PI Major Mutations:

PI Accessory Mutations:

PR Other Mutations:

I84V100%
seen:1,028

L10F90%
seen:1,625

L13V90%
seen:1,521

K20T100%
seen:2,115

E35D100%
seen:3,134

M36I100%
seen:3,134

L89T100%
seen:3,028

L89V90%
seen:3,131

R41K90%
seen:3,131

K43R100%
seen:3,134

R57K90%
seen:3,134

L63P100%
seen:3,281

H69Q95%
seen:3,112

A71V90%
seen:3,403

I72V90%
seen:3,401

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

PR comments

Major

- I84V is a nonpolymorphic substrate-cleft mutation selected by each of the PIs. I84V reduces susceptibility to LPV, ATV, and DRV.

Accessory

- L10F is a common non-polymorphic, PI-selected accessory mutation associated with reduced in vitro susceptibility to LPV and DRV.
- K20T is a non-polymorphic accessory PI-selected mutation associated with reduced susceptibility to ATV and LPV.
- L89V is a nonpolymorphic accessory mutation weakly selected by each of the PIs. It appears to be minimally associated with reduced PI susceptibility. L89T is an uncommon non-polymorphic PI-selected mutation selected primarily by ATV.

Other

- A71V/T 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.

Mutation scoring: PR

HIVDB 9.5.1 (2023-11-05)

Drug resistance mutation scores of PI:

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Rule	ATV/r	DRV/r	FPV/r	IDV/r	LPV/r	NFV	SQV/r	TPV/r
K20T	5	0	5	5	0	15	5	0
I84V	60	15	60	60	30	60	60	30
L10F	0	5	15	10	5	15	0	0
Total	65	20	80	75	35	90	65	30

Drug resistance interpretation: RT

HIVDB 9.5.1 (2023-11-05)

NRTI Mutations:

NNRTI Mutations:

RT Other Mutations:

M41ML90%
seen:1,204

M184V90%
seen:1,403

T215Y90%
seen:1,227

K103N90%
seen:285

E6D100%
seen:1,017

V21I100%
seen:3,621

V35T100%
seen:3,635

V60I100%
seen:3,292

K64R90%
seen:353

K102Q90%
seen:349

V118I100%
seen:1,117

K122E100%
seen:403

D123S90%
seen:403

I135L100%
seen:521

I142V90%
seen:1,124

K173A100%
seen:2,115

Q174K100%
seen:2,115

D177N90%
seen:1,105

T200A100%
seen:1,504

E203D100%
seen:1,084

Q207E100%
seen:1,364

R211K90%
seen:1,361

F214L100%
seen:1,307

L228LR90%
seen:363

V245Q90%
seen:119

D250E100%
seen:1,034

Nucleoside Reverse Transcriptase Inhibitors		Non-nucleoside Reverse Transcriptase Inhibitors	
abacavir (ABC)	Intermediate Resistance	doravirine (DOR)	Susceptible
zidovudine (AZT)	High-Level Resistance	efavirenz (EFV)	High-Level Resistance
stavudine (D4T)	Intermediate Resistance	etravirine (ETR)	Susceptible
didanosine (DDI)	Intermediate Resistance	nevirapine (NVP)	High-Level Resistance
emtricitabine (FTC)	High-Level Resistance	rilpivirine (RPV)	Susceptible
lamivudine (3TC)	High-Level Resistance		
tenofovir (TDF)	Low-Level Resistance		

RT comments

NRTI

- M41L is a TAM that usually occurs with T215Y. In combination, M41L plus T215Y confer intermediate / high-level resistance to AZT and d4T and contribute to reduced ddI, ABC and TDF susceptibility.
- M184V/I cause high-level in vitro resistance to 3TC and FTC and low/intermediate resistance to ABC (3-fold reduced susceptibility). M184V/I are not contraindications to continued treatment with 3TC or FTC because they increase susceptibility to AZT and TDF and are associated with clinically significant reductions in HIV-1 replication.
- T215Y/F are TAMs that causes intermediate/high-level resistance to AZT and potentially low-level resistance to ABC and TDF.

NNRTI

- K103N is a non-polymorphic mutation that confers high-level reductions in NVP and EFV susceptibility. It is the most commonly transmitted DRM.

Other

- V118I is a polymorphic accessory NRTI-resistance mutation that often occurs in combination with multiple TAMs.

Drug resistance mutation scores of NRTI: [Download CSV](#)

Rule	ABC	AZT	D4T	DDI	FTC	3TC	TDF
<u>M41ML</u>	5	15	15	10	0	0	5
<u>M41ML + M184V + T215Y</u>	10	0	0	0	0	0	0
<u>M41ML + T215Y</u>	10	10	10	10	5	5	10
<u>M184V</u>	15	-10	-10	10	60	60	-10
<u>T215Y</u>	10	60	40	15	0	0	10
Total	50	75	55	45	65	65	15

Drug resistance mutation scores of NNRTI: [Download CSV](#)

Rule	DOR	EFV	ETR	NVP	RPV
<u>K103N</u>	0	60	0	60	0