Drug resistance interpretation: PR

HIVDB 9.5.1 (2023-11-05)

PI Major Mutations: **I54IV** t: 79%, v: 19% cov=38,031

PI Accessory Mutations: None

PR Other Mutations: I13V 98% cov=33,203 • K20R 93% cov=36,556 • M36I 98% cov=40,574 • R41K 98% cov=40,274 • D60E 89% cov=28,022 • Q61N 89% cov=27,882 • I62IV t: 52%, v: 45% cov=27,859 • L63E 98% cov=27,736 • I64V 92% cov=27,751 • E65D 92% cov=29,595

Protease Inhibitors	
atazanavir/r (ATV/r)	Low-Level Resistance
darunavir/r (DRV/r)	Susceptible
lopinavir/r (LPV/r)	Low-Level Resistance

PR comments

Major

- **I54V** is a non-polymorphic PI-selected mutation that contributes reduced susceptibility to each of the PIs except DRV.

Other

- **K20R** is a highly polymorphic PI-selected accessory mutation that increases replication fitness in viruses with PI-resistance mutations.

Mutation scoring: PR

HIVDB 9.5.1 (2023-11-05)

Drug resistance mutation scores of PI: Download CSV

Rule	ATV/r	DRV/r	LPV/r
I54IV	15	0	15

Drug resistance interpretation: RT

HIVDB 9.5.1 (2023-11-05)

NRTI Mutations: **K65R** 94% cov=16,970 • **S68G** 95% cov=17,225 • **M184I** 96% cov=23,512

NNRTI Mutations: **K103N** 98% cov=18,987 • **M230L** 95% cov=20,652 • **L234I** 95% cov=20,226

RT Other Mutations: V35T 98% cov=17,360 • T39M 94% cov=16,940 • K46Q 93% cov=16,851 • K49R 96% cov=17,306 • V60I 98% cov=17,698 • V90I 96% cov=18,299 • K104R 98% cov=18,984 • D121Y 96% cov=19,286 • K122E 98% cov=19,345 • I135M 98% cov=20,433 • D177E 95% cov=23,207 • I178M 96% cov=23,210 • T200A 98% cov=22,880 • Q207E 97% cov=20,505 • V245T 95% cov=20,014 • D250A 95% cov=21,028 • A272P 98% cov=23,940 • K275Q 95% cov=23,868 • V276T 95% cov=23,862 • L282C 96% cov=23,286 • L283I 94% cov=23,309 • T286AV A: 58%, V: 40% cov=24,958 • A288T 95% cov=28,232 • V292VI I: 51%, V: 48% cov=29,022 • I293V 98% cov=28,849 • P294PA P: 54%, A: 44% cov=29,297

Nucleoside Reverse Transcriptase Inhibitors	
abacavir (ABC)	High-Level Resistance
zidovudine (AZT)	Susceptible
emtricitabine (FTC)	High-Level Resistance
lamivudine (3TC)	High-Level Resistance
tenofovir (TDF)	Intermediate Resistance

Non-nucleoside Reverse Transcriptase Inhibitors	
doravirine (DOR)	High-Level Resistance
efavirenz (EFV)	High-Level Resistance
etravirine (ETR)	Intermediate Resistance
nevirapine (NVP)	High-Level Resistance
rilpivirine (RPV)	High-Level Resistance

RT comments

NRTI

- **K65R** confers intermediate reductions in susceptibility to TDF, ABC, and 3TC/FTC. It increases AZT susceptibility. In NRTI-experienced, INSTI-naive patients with **K65R**, TDF+3TC+DTG is usually highly effective and more effective than AZT/3TC/DTG. However, in patients receiving TDF+3TC+DTG, there is a risk of emergent DTG resistance that does not arise in NRTI-naive patients receiving TDF+3TC+DTG.
- **S68G** is a polymorphic mutation that is often selected in combination with K65R. It partially restores the replication defect associated with K65R.
- **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.

NNRTI

- **K103N** is a non-polymorphic mutation that confers high-level reductions in NVP and EFV susceptibility. It is the most commonly transmitted DRM.
- **M230L** is an uncommon non-polymorphic mutation selected in persons receiving EFV, NVP, and RPV. It causes intermediate to high-level resistance to each of the NNRTIs.
- **L234I** is a nonpolymorphic mutation selected in persons receiving NVP and EFV. It is also selected in vitro by ETR and DOR. In combination with V106A, it is associated with high-level DOR resistance. Its effect on susceptibility when it occurs alone has 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.

Mutation scoring: RT — HIVDB 9.5.1 (2023-11-05)

Drug resistance mutation scores of NRTI: Download CSV

Rule	ABC	AZT	FTC	3TC	TDF
K65R	45	-10	30	30	50
M184I	15	-10	60	60	-10
K65R + S68G	0	0	0	0	5
Total	60	-20	90	90	45

Drug resistance mutation scores of NNRTI: Download CSV

Rule	DOR	EFV	ETR	NVP	RPV
M230L	60	45	30	60	60
L234I	45	0	0	0	0
K103N	0	60	0	60	0
Total	105	105	30	120	60