## Drug resistance interpretation: PR

HIVDB 9.5.1 (2023-11-05)

PI Major Mutations: None
PI Accessory Mutations: None
PR Other Mutations: V11H • T12Y • I13R • K14Q • I15E • G16T • Q18D • L19Q • K20S • E21Q • A22I • L23S • L24Q • D25P • T26S • G27K • A28D • D29F • D30* • T31P • E35D • M36I • R41K • K45R • R57K • Q61E • L63P • E65L • C67Y • H69L • K70R • V77L • V82I • N83S • L89M

| Protease Inhibitors | |
|---|---|
| **atazanavir/r (ATV/r)** | Susceptible |
| **darunavir/r (DRV/r)** | Susceptible |
| **fosamprenavir/r (FPV/r)** | Susceptible |
| **indinavir/r (IDV/r)** | Susceptible |
| **lopinavir/r (LPV/r)** | Susceptible |
| **nelfinavir (NFV)** | Susceptible |
| **saquinavir/r (SQV/r)** | Susceptible |
| **tipranavir/r (TPV/r)** | Susceptible |

**PR comments**

**Other**

- L24I is a non-polymorphic mutation selected by IDV and LPV. It contributes reduced susceptibility to ATV and LPV. L24F/M are uncommon non-polymorphic PI-selected mutations. L24F has a susceptibility profile similar to L24I. **L24D** is a highly unusual mutation at this position.
- **V82I** is a highly polymorphic mutation that is not selected by PIs. It is the consensus amino acid in subtype G viruses.

## Mutation scoring: PR

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*No drug resistance mutations were found for PI.*

## Drug resistance interpretation: RT

HIVDB 9.5.1 (2023-11-05)

NRTI Mutations: K65R • Y115F
NNRTI Mutations: K103N • Y181C • P225H
RT Other Mutations: K11T • K20R • V35T • T39A • K46Q • P55S • R78T • K101T • K122E • D123S • S134R • K173S • D177E • Q197K • T200E • E203Y • Q207A • L228S • W229L • M230D • E233V • L234X • W239* • P243L • V245Q • D256E • V261L • W266C

| Nucleoside Reverse Transcriptase Inhibitors | |
|---|---|
| **abacavir (ABC)** | High-Level Resistance |
| **zidovudine (AZT)** | Susceptible |
| **stavudine (D4T)** | High-Level Resistance |
| **didanosine (DDI)** | High-Level Resistance |
| **emtricitabine (FTC)** | Intermediate Resistance |
| **lamivudine (3TC)** | Intermediate Resistance |
| **tenofovir (TDF)** | High-Level Resistance |

| Non-nucleoside Reverse Transcriptase Inhibitors | |
|---|---|
| **doravirine (DOR)** | Intermediate Resistance |
| **efavirenz (EFV)** | High-Level Resistance |
| **etravirine (ETR)** | Intermediate Resistance |
| **nevirapine (NVP)** | High-Level Resistance |
| **rilpivirine (RPV)** | Intermediate 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.
- **Y115F** causes intermediate resistance to ABC and low-level resistance to 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.
- **Y181C** is a non-polymorphic mutation selected in persons receiving NVP, ETR and RPV. It confers high-level resistance to NVP, intermediate resistance to ETR and RPV, and low-level resistance to EFV. It does not significantly reduce DOR susceptibility.
- **P225H** is a non-polymorphic EFV-selected mutation that usually occurs in combination with K103N. The combination of **P225H** and K103N synergistically reduces NVP, EFV and DOR susceptibility.

**Other**

- **K101N/A/T** are uncommon non-polymorphic NNRTI-selected mutation of uncertain phenotypic and clinical significance.
- 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. M230I is a rare mutation selected by RPV. Its effects on NNRTI susceptibility have not been well studied. It also often occurs as a result of APOBEC-mediated G-to-A hypermutation resulting in viruses that are likely to be noninfectious. **M230D** is a highly unusual mutation at this position.

- This virus is predicted to have intermediate-level reduced susceptibility to **RPV**. The use of the combination of CAB/**RPV** should be considered to be contraindicated.

Mutation scoring: RT

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*Drug resistance mutation scores of NRTI:* Download CSV

| Rule | ABC | AZT | D4T | DDI | FTC | 3TC | TDF |
|---|---|---|---|---|---|---|---|
| K65R | 45 | -10 | 60 | 60 | 30 | 30 | 50 |
| Y115F | 30 | 0 | 0 | 0 | 0 | 0 | 15 |
| Total | 75 | -10 | 60 | 60 | 30 | 30 | 65 |

*Drug resistance mutation scores of NNRTI:* Download CSV

| Rule | DOR | EFV | ETR | NVP | RPV |
|---|---|---|---|---|---|
| K103N + Y181C | 5 | 0 | 0 | 0 | 0 |
| K103N + P225H | 10 | 0 | 0 | 0 | 0 |
| Y181C | 10 | 30 | 30 | 60 | 45 |
| P225H | 20 | 45 | 0 | 45 | 0 |
| K103N | 0 | 60 | 0 | 60 | 0 |
| Total | 45 | 135 | 30 | 165 | 45 |