# QuasiFlow NGS-Based HIV Drug Resistance Report

## Sequence summary

**Query ID**: DRR030219_1_DRR030219_2_1_hxb2_pol

**Sequence includes**: PR, RT, IN

**Sequence subtype**: B

## Basic pipeline parameters

**Minimum mutation frequency**: 0.2

**Minimum percentage a base needs to be incorporated into the consensus sequence**: 20

**Minimum read depth**: 1000

## Drug Resistance Interpretation: PR

**Algorithm version**: HIVDB 9.1 (2022-06-02)

**PI Major Resistance Mutations**: I84V, L90M

**PI Accessory Resistance Mutations**: None

**Other PR Mutations**: I13V, K14KR, R41K, K43R, M46I, K55KR, I62IV, L63P, A71V, I72T, G73S, V77I, I93L

Comments

A71V/T are polymorphic, PI-selected accessory mutations that increase the replication of viruses with other PI-resistance mutations.
I84V is a non-polymorphic mutation selected by each of the PIs. It causes high-level resistance to ATV, FPV, IDV, NFV and SQV, intermediate resistance to LPV and TPV, and low-level resistance to DRV.
L90M is a non-polymorphic PI-selected mutation that reduces susceptibility to each of the PIs except TPV and DRV.

**Mutation HIVDR Scores: PR**

| Drug name | HIVDB Score | Drug susceptibility |
|---|---|---|
| ATV | 130 | High-Level Resistance |
| DRV | 15 | Low-Level Resistance |
| FPV | 125 | High-Level Resistance |
| IDV | 140 | High-Level Resistance |
| LPV | 65 | High-Level Resistance |
| NFV | 190 | High-Level Resistance |
| SQV | 150 | High-Level Resistance |
| TPV | 40 | Intermediate Resistance |

## Drug Resistance Interpretation: RT

**Algorithm version**: HIVDB 9.1 (2022-06-02)

**NNRTI Resistance Mutations**: None

**NRTI Resistance Mutations**: M41L, T215Y

**Other RT Mutations**: K20R, K49KR, D67ND, T69NTDA, I135T, E169KE, K173E, M184V, E203KE, Q207E, L210WL, Q334L, Y342YF, M357T, A360V, T386I, K390R, A400T, R461K, G490EG, L491S, A554T, K558R

| Comments |
|---|
| K20R is a highly polymorphic PI-selected accessory mutation.<br>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.<br>T215Y is a TAM that causes intermediate/high-level resistance to AZT and d4T, low-level resistance to ddI, and potentially low-level resistance to ABC and TDF. |

**Mutation HIVDR Scores: NRTI**

| Drug name | HIVDB Score | Drug susceptibility |
|---|---|---|
| ABC | 85 | High-Level Resistance |
| AZT | 110 | High-Level Resistance |
| D4T | 120 | High-Level Resistance |
| DDI | 115 | High-Level Resistance |
| FTC | 80 | High-Level Resistance |
| LMV | 80 | High-Level Resistance |
| TDF | 55 | Intermediate Resistance |

**Mutation HIVDR Scores: NNRTI**

| Drug name | HIVDB Score | Drug susceptibility |
|---|---|---|
| DOR | 0 | Susceptible |
| EFV | 0 | Susceptible |
| ETR | 0 | Susceptible |
| NVP | 0 | Susceptible |
| RPV | 0 | Susceptible |

## Drug Resistance Interpretation: IN

**Algorithm version**: HIVDB 9.1 (2022-06-02)

**INI Major Resistance Mutations**: V32I

**INI Accessory Resistance Mutations**: None

**Other IN Mutations**: T112TIAV, V201IV

| Comments |
|---|
| V32I is a non-polymorphic PI-selected mutation associated with reduced susceptibility to each of the PIs except SQV. It is included in the Tibotec DRV genotypic susceptibility score. |

**Mutation HIVDR Scores: INI**

| Drug name | HIVDB Score | Drug susceptibility |
|---|---|---|
| BIC | 0 | Susceptible |
| CAB | 0 | Susceptible |
| DTG | 0 | Susceptible |
| EVG | 0 | Susceptible |
| RAL | 0 | Susceptible |

## References


Andrews, Simon, and others. 2010. "FastQC: A Quality Control Tool for High Throughput Sequence Data."

Baumer, Benjamin, and Dana Udwin. 2015. "R Markdown." *Wiley Interdisciplinary Reviews: Computational Statistics* 7 (3): 167–77.

Ewels, Philip, Måns Magnusson, Sverker Lundin, and Max Käller. 2016. "MultiQC: Summarize Analysis Results for Multiple Tools and Samples in a Single Report." *Bioinformatics* 32 (19): 3047–48.

Ho, Jasper C, Garway T Ng, Mathias Renaud, and others. 2019. "Sierra-Local: A Lightweight Standalone Application for Drug Resistance Prediction." *Journal of Open Source Software* 4 (33): 1186.

Mailund, Thomas. 2019. "Manipulating Data Frames: Dplyr." In *R Data Science Quick Reference*, 109–60. Springer.

Marinier, Eric, Eric Enns, Camy Tran, Matthew Fogel, Cole Peters, Ahmed Kidwai, Hezhao Ji, and Gary Van Domselaar. 2019. "Quasitools: A Collection of Tools for Viral Quasispecies Analysis." *BioRxiv*, 733238.

Ooms, Jeroen. 2014. "The Jsonlite Package: A Practical and Consistent Mapping Between Json Data and r Objects." *arXiv Preprint arXiv:1403.2805*.

Wickham, Hadley, and Maintainer Hadley Wickham. 2020. "Package 'Plyr'." *Obtenido Httpscran Rproject Orgwebpackagesdplyrdplyr Pdf*.

Xie, Yihui. 2018. "Knitr: A Comprehensive Tool for Reproducible Research in r." In *Implementing Reproducible Research*, 3–31. Chapman; Hall/CRC.