

# NGS-Based HIV Drug Resistance Report

## Sequence summary

**Query ID:** DRR030218\_1\_val\_1\_DRR030218\_2\_val\_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:** L90M

**PI Accessory Resistance Mutations:** None

**Other PR Mutations:** I13V, K14KR, R41K, K43R, M46I, K55KR, I62IV, L63P, A71V, I72T, G73S, V77I, I84IV, I93L

### Comments

A71V/T are polymorphic, PI-selected accessory mutations that increase the replication of viruses with other PI-resistance mutations.

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, K49R, I135T, E169KE, K173E, M184V, Q207E, Q334L, Y342F, M357T, A360V, T386I, K390R, A400T, R461K, G490EG, L491S, A554T, K558R

### Comments

K20R is a highly polymorphic PI-selected accessory mutation.

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 ddl, ABC and TDF susceptibility.

T215Y is a TAM that causes intermediate/high-level resistance to AZT and d4T, low-level resistance to ddl, and potentially low-level resistance to ABC and TDF.

### Mutation HIVDR Scores: NRTI

Drug name	HIVDB Score	Drug susceptibility
ABC	45	Intermediate Resistance
AZT	55	Intermediate Resistance
D4T	55	Intermediate Resistance
DDI	45	Intermediate Resistance
FTC	65	High-Level Resistance
LMV	65	High-Level Resistance
TDF	15	Low-Level 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

---

### 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.
- Krueger, Felix. 2015. "Trim Galore." *A Wrapper Tool Around Cutadapt and FastQC to Consistently Apply Quality and Adapter Trimming to FastQ Files* 516: 517.
- 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.