# Human Immunodeficiency Virus 1 by Next Generation Sequencing

## Drug Class | Drug | Evidence of Resistance
--- | --- | ---
**INSTI** | Bictegravir, BIC | Intermediate Resistance
 | Cabotegravir, CAB | Intermediate Resistance
 | Dolutegravir, DTG | Intermediate Resistance
 | Elvitegravir, EVG | Intermediate Resistance
 | Raltegravir, RAL | Low-Level Resistance
**PI** | Atazanavir, ATV | Susceptible
 | Darunavir, DRV | Susceptible
 | Fosamprenavir, FPV | Susceptible
 | Indinavir, IDV | Susceptible
 | Lopinavir, LPV | Susceptible
 | Nelfinavir, NFV | Susceptible
 | Saquinavir, SQV | Susceptible
 | Tipranavir, TPV | Susceptible
**NRTI** | Abacavir, ABC | High-Level Resistance
 | Zidovudine, AZT | Susceptible
 | Stavudine, D4T | Low-Level Resistance
 | Didanosine, DDI | High-Level Resistance
 | Emtricitabine, FTC | High-Level Resistance
 | Lamivudine, LMV | High-Level Resistance
 | Tenofovir, TDF | Intermediate Resistance
**NNRTI** | Doravirine, DOR | Susceptible
 | Efavirenz, EFV | High-Level Resistance
 | Etravirine, ETR | Susceptible
 | Nevirapine, NVP | High-Level Resistance
 | Rilpivirine, RPV | Susceptible

## Drug Resistance Mutations Identified

| Drug Class | Mutations Identified |
--- | ---
**INSTI** | R263K
**PI** | None
**NRTI** | K65E, K70N, L74V, Y115F, M184V
**NNRTI** | K103N
Additional Information

INTERPRETIVE INFORMATION: HIV-1 Drug Resistance by NGS

This assay predicts HIV-1 resistance to protease inhibitors, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors and integrase inhibitors. The protease gene, integrase gene and the reverse transcriptase gene of the viral genome are sequenced using Next Generation Sequencing. Drug resistance is assigned using the Stanford hivdb database.

This test should be used in conjunction with clinical presentation and other laboratory markers. A patient’s response to therapy depends on multiple factors, including patient adherence, percentage of resistant virus population, dosing, and drug pharmacology issues.

This test detects populations down to 10 percent of the total population which may account for resistance interpretation differences between methods. Some insertions or deletions may be difficult to detect using this software.

This test was developed, and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Gene Accessory Resistance Mutations Identified

<table>
<thead>
<tr>
<th>Gene</th>
<th>Mutations</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN</td>
<td>A49G</td>
</tr>
<tr>
<td>PR</td>
<td>None</td>
</tr>
<tr>
<td>RT</td>
<td>None</td>
</tr>
</tbody>
</table>

Additional Mutations:

Integrase:

Protease:
- L63P, I64V, A71T, I72E, V77I, I93L

Reverse Transcriptase:

HIVGenotyper Software Version: 2.1.0.4
Stanford HIV Drug Resistance Database Version: HIVDB_9.4