

PI Major Mutations:

L90M

PI Accessory Mutations:

G73T

PR Other Mutations:

L10I • N37D • K43R • D60E • L63P • A71V • V77I • I93L

Protease Inhibitors	
atazanavir/r (ATV/r)	Intermediate Resistance
darunavir/r (DRV/r)	Susceptible
fosamprenavir/r (FPV/r)	Intermediate Resistance
indinavir/r (IDV/r)	Intermediate Resistance
lopinavir/r (LPV/r)	Low-Level Resistance
nelfinavir (NFV)	High-Level Resistance
saquinavir/r (SQV/r)	High-Level Resistance
tipranavir/r (TPV/r)	Susceptible

PR comments

- Major
- L90M is a non-polymorphic PI-selected mutation that reduces susceptibility to ATV and to a lesser extent LPV.

- Accessory
- G73S/T/C/A are common non-polymorphic accessory mutations selected primarily by most PIs. They are associated with minimally reduced susceptibility to each of the PIs.

- Other
- L10I/V are polymorphic, PI-selected accessory mutations that increase the replication of viruses with other PI-resistance mutations.
 - A71W/T are polymorphic, PI-selected accessory mutations that increase the replication of viruses with other PI-resistance mutations.

Drug resistance mutation scores of PI:

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Rule	ATV/r ÷	DRV/r ÷	FPV/r ÷	IDV/r ÷	LPV/r ÷	NFV ÷	SQV/r ÷	TPV/r ÷
G73T	10	0	10	15	5	15	15	0
G73T + L90M	10	0	10	10	0	10	10	0
L90M	25	0	20	30	15	60	45	0
Total	45	0	40	55	20	85	70	0

NRTI Mutations:

M41L • D67N • K70R • L74L • T215F • K219Q

NNRTI Mutations:

None

RT Other Mutations:

K43Q • T69N • K122E • D177E • I178M • G196E • E203D • Q207K • R211A • L228H • T240TP

Nucleoside Reverse Transcriptase Inhibitors		Non-nucleoside Reverse Transcriptase Inhibitors	
abacavir (ABC)	High-Level Resistance	doravirine (DOR)	Susceptible
zidovudine (AZT)	High-Level Resistance	efavirenz (EFV)	Susceptible
stavudine (D4T)	High-Level Resistance	etravirine (ETR)	Susceptible
didanosine (DDI)	High-Level Resistance	nevirapine (NVP)	Susceptible
emtricitabine (FTC)	Low-Level Resistance	rilpivirine (RPV)	Susceptible
lamivudine (3TC)	Low-Level Resistance		
tenofovir (TDF)	High-Level Resistance		

RT comments

- NRTI
- 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.
 - D67N is a non-polymorphic TAM associated with low-level resistance to AZT.
 - K70R is a TAM that confers intermediate resistance to AZT and contributes to reduced ABC and TDF susceptibility in combination with other TAMs.
 - L74V causes intermediate ABC resistance. L74I causes low-level ABC resistance.
 - T215Y/F are TAMs that causes intermediate/high-level resistance to AZT and potentially low-level resistance to ABC and TDF.
 - K219E/Q/N/R are accessory TAMs that usually occur in combination with multiple other TAMs.

- Other
- T69N/S/A/I/E are relatively non-polymorphic mutations weakly selected in persons receiving NRTIs. They may minimally contribute reduced AZT susceptibility.

Drug resistance mutation scores of NRTI:

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Rule	ABC	AZT	D4T	DDI	FTC	3TC	TDF
M41L	5	15	15	10	0	0	5
M41L + D67N + T215F	5	5	5	5	0	0	5
M41L + T215F	10	10	10	10	5	5	10
D67N	5	15	15	5	0	0	5
D67N + K70R + K219Q	10	15	10	10	10	10	10
D67N + T215F + K219Q	5	5	5	5	0	0	5
K70R	5	30	15	10	0	0	5
L74LI	15	0	0	60	0	0	5
T215F	10	60	40	15	0	0	10
K219Q	5	10	10	5	0	0	5
K70R + T215F	0	0	5	5	0	0	0
Total	75	165	130	140	15	15	65

No drug resistance mutations were found for NNRTI.