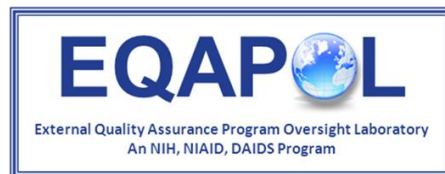


## CERTIFICATE OF ANALYSIS

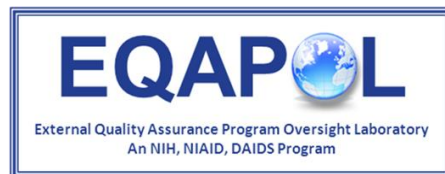
### EQAPOL Panel of Drug Resistant Viruses

The EQAPOL Drug Resistant Viruses Panel is comprised of 29 circulating strains of HIV from around the world. HIV sources are cultured to high titer/high volume and then stored as neat culture supernatant. These strains have been fully characterized and sequenced. The tables below consist of protease inhibitor (PI), nucleoside RT inhibitor (NRTI), and non-nucleoside RT inhibitor (NNRTI)- resistance mutations. The percentage of each mutation found in the culture based on Next-Generation sequencing is listed in table for each sample.

PI															
Virus Name	Subtype	Major									Minor				
		M46L/I	I54V	D30n	V321	L76V	V82A	N88D	I85V	L90M	L10V/I	K20	L24I	A71V	V82I
DEMA11KE001	A1	I(1.38)									V(98.28)		1.85		
DEMA114PK002	A1														
DEMA114PK013	A1												1.1		
DEMA108RW010	A1	L(97.8)													
DEMB99JP004	B													28.03	70.25
DEMB09BO001	B										I(1.02)		1.57	99.02	
DEMB10ES003	B										I(1.18)		1.74	98.74	
DEMB11US011	B			97.41				97.01					1.55	98.01	
DEMB09US002	B														
DEMB09ZA022	B										I(1.23)	M(96.15), R(1.15)			97.67
DEMB11DR001	B	I(1.38)											R(1.09)	1.22	
DEMB11US002	B												2.83		
DEMB11JP002	B								97.91				1.28		
DEMB10ES002	B									98.35					
DEMB10CN002	B									97.77	I(97.97)	V(25.77)		T(96.84)	
DEMC11ZM003	C														
DEMC08MW004	C									46.29			R(2.86)		98.5
DEMF111BR037	F1	I(2.22)									I(1.95)				
DEMG09ES002	G														98.02
DE00210CM019	CRF02_AG											I (97.59)	1.14		
DE07010BR033	CRF70_BF1														
DEURF09ES005	URF_A1B												1.32		
DEURF10KE001	URF_A1 C												R(97.32)	1.87	
DEURF10KE003	URF_A1 C			1.03									R(96.76)	2.32	
DEURF09KE002	URF_A1D												R(97.54)	1.65	
DEURF08UG002	URF_A1D													1.3	
DEURF14PK015	URF_A1G			1.93	1.4									6.21	
DEURF06CM001	URF_01A1G	I(1.47)											I(93.52)	2.56	
DEMBF09ES006	URF_BF	I(99.89)	99.13			99.55	99.52				V(99.73)	R(98.81)		99.33	



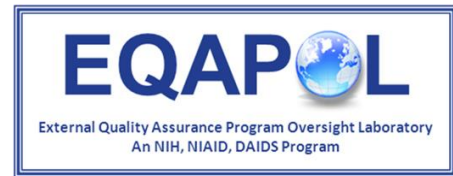
NRTI										
Virus Name	Subtype	Major							Minor	
		T215C/D	D67N	K219Q	M184V	F77L	V75I	L74V	V90I	V106I
DEMA11KE001	A1		3.43		1.07	3.65	1.89	1.04	1.64	1.27
DEMA114PK002	A1		2.26				1.03			
DEMA114PK013	A1		2.95			1.48	1.26			
DEMA108RW010	A1		3.52			2.68	1.36			
DEMB99JP004	B	D(61.97)	2.04			2.15	1.04	1.31		
DEMB09BO001	B		92.7	95.24		2.63	1.54	1.07		1.33
DEMB10ES003	B		92.75	94.72		3.06	1.45	1.12		1.2
DEMB11US011	B		1.64			2.76	1.59	1.05		
DEMB09US002	B		3.09			1.48		1.17		
DEMB09ZA022	B		95.4	96.58	1.2			1.08		
DEMB11DR001	B		1.84			2.13	1.89	1.15		
DEMB11US002	B		1.9		1.27	2.99	1.03	1.04		1.08
DEMB11JP002	B		3.8			2.83	1.26	1.21		1.08
DEMB10ES002	B		4.3			4.17	1.36	1.37		1.38
DEMB10CN002	B	C(84.71)	3.72			3	1.04	1.14		
DEMC11ZM003	C		1.55			3.07	1.54	1.01		
DEMC08MW004	C					3.87	1.45			
DEMF111BR037	F1									
DEMG09ES002	G		4.22			3.28	1.17	1.57		
DE00210CM019	CRF02_AG		2.07			2				
DE07010BR033	CRF70_BF1		1.87			1.62				
DEURF09ES005	URF_A1B		1.21			2.63	1.38	1.04		
DEURF10KE001	URF_A1 C		1.43			2.76	1.37			
DEURF10KE003	URF_A1 C		1.48			3.23	1.73			1.16
DEURF09KE002	URF_A1D		3.57			2.27	1.69	1.2		
DEURF08UG002	URF_A1D		2.11			3.22	1.83	1.04		
DEURF14PK015	URF_A1G		2.58				1.23			
DEURF06CM001	URF_01A1G		2.45		97.31	2.29	1.58		12.77	1.29
DEMBF09ES006	URF_BF									



NNRTI											
Virus Name	Subtype	Major									Minor
		E138A/K	V179D	K103N	Y188L	V179E/D	V108I	P225H	L100I	M230L	V179T/I
DEMA11KE001	A1	A(97.3)					1.07	2.78	1.32	1.63	
DEMA114PK002	A1	A(98.73)						1.85			T(99.23)
DEMA114PK013	A1	A(98.83)						1.58			
DEMA108RW010	A1							1.05	1.69		
DEM03JP004	B							1.58	1.5		
DEMB09BO001	B							1.55	1.48	1.27	
DEMB10ES003	B							4.02	1.33	3.57	
DEMB11US011	B	K(98.47)						3.06	2.24		
DEMB09US002	B			97.42				1.8			
DEMB09ZA022	B			94.62				2.29	1.9		
DEMB11DR001	B			95.36				3.01			
DEMB11US002	B							3.66	1.59		
DEMB11JP002	B							2.76	1.06		
DEMB10ES002	B							3.93	1.53		
DEMB10CN002	B				97.46		1.04	2.63		1.48	
DEMC11ZM003	C			93.58				1.21	1.26		
DEMC08MW004	C								1.43		
DEMF111BR037	F1			95.71							
DEMG09ES002	G	A(97.11)				E(97.98)		3.3	1.28		
DE00210CM019	CRF02_AG	A(98.15)						1.89			
DE07010BR033	CRF70_BF1	A(97.84)					96.83	1.95			
DEURF09ES005	URF_A1B		96.64					1.79	1.41		
DEURF10KE001	URF_A1 C			93.24				3.08		2.95	
DEURF10KE003	URF_A1 C	A(97.56)		93.05				2.25	1.55	1.13	
DEURF09KE002	URF_A1D	A(97.6)						1.55			
DEURF08UG002	URF_A1D					D(97.27)		3.1	1.62	3.48	
DEURF14PK015	URF_A1G	A(97.82)									
DEURF06CM001	URF_01A1G			92.23			1.06	2.5	1.63		
DEMBF09ES006	URF_BF			S(99.28)							I(99.61)



Virus Name	Supernatant Viral Load (cp/mL)	Subtype	Country of Origin	Donation Year	Stage	Coreceptor (Phenotype)	TCID	GenBank	p24 (pg/mL)	Age	Sex
DEMA11KE001	1.24E+10	A1	Kenya	2011	IV	CCR5	1.40E+07	KF716475	1.31E+05	22	M
DEMA114PK002	3.17E+09	A1	Pakistan	2014	VI	CCR5	8.06E+05	KU749410	9.00E+04	43	M
DEMA114PK013	1.03E+10	A1	Pakistan	2014	VI	CCR5	1.24E+06	KU749411	9.07E+04	30	M
DEMA108RW010	1.14E+09	A1	Rwanda	2008	IV	CCR5	1.40E+05	KU749424	3.47E+04	46	M
DEMB99JP004	1.04E+10	B	Japan	2003	I/II (Nat Yield)	R5	8.20E+05	KC473846	2.80E+05	unk	unk
DEMB09BO001	1.27E+09	B	Bolivia	2009	acute	R5	2.47E+05	JX140656	5.07E+05	33	M
DEMB10ES003	2.62E+09	B	Spain	2010	acute	R5	1.61E+05	KC473843	7.10E+04	34	M
DEMB11US011	2.20E+09	B	USA	2011	V	R5	5.34E+05	KC473834	8.50E+04	20	M
DEMB09US002	8.88E+09	B	USA	2009	I/II (Nat Yield)	R5	2.80E+04	JX140657	2.59E+05	unk	unk
DEMB09ZA022	2.45E+09	B	South Africa	2009	I/II	R5/X4	1.79E+06		3.02E+05	49	M
DEMB11DR001	2.31E+09	B	Dominican Republic	2011	VI	CCR5	3.59E+05	KY658702	2.33E+05	unk	unk
DEMB11US002	1.75E+10	B	USA	2011	VI	R5	8.06E+05	KC473831	2.13E+05	19	M
DEMB11JP002	1.56E+09	B	Japan	2011	unk	CCR5/CXCR4	5.27E+05	KF716497	3.31E+05	unk	unk
DEMB10ES002	3.66E+09	B	Spain	2010	acute	R5	2.26E+05	KC473842	2.18E+05	36	M
DEMB10CN002	5.05E+09	B	China	2010	CHI	R5	6.99E+05	JX140658	2.11E+05	26	M
DEMC11ZM003	5.94E+09	C	Zambia	2011	VI	R5	2.48E+05		3.02E+05	47	M
DEMC08MW004	5.09E+09	C	Malawi	2008	IV	R5/X4	1.56E+06		2.98E+05	21	M
DEMF111BR037	3.45E+09	F1	Brazil	2011	VI	CCR5	1.79E+06	KU749396	1.24E+05	25	unk
DEMG09ES002	8.70E+09	G	Spain	2009	acute	R5	9.91E+04	JX140675	2.80E+05	56	M
DE00210CM019	1.54E+09	CRF02_A G	Cameroon	2010	VI	CCR5	8.06E+05	KU749419	3.11E+05	unk	unk
DE07010BR033	2.96E+09	CRF70_B F1	Brazil	2010	VI	CCR5	1.40E+05	KU749388	1.38E+05	24	unk
DEURF09ES005	6.91E+09	A1B (URF)	Spain	2009	unk	R5	1.40E+06	JX140678	3.26E+05	31	M
DEURF10KE001	8.83E+09	URF_A1 C	Kenya	2010	VI	CCR5	4.23E+05	KF716469	2.40E+05	25	M
DEURF10KE003	9.91E+09	URF_A1 C	Kenya	2010	VI	CCR5	3.59E+05	KF716471	2.49E+05	26	M
DEURF09KE002	5.99E+09	URF_A1D	Kenya	2009	VI	CCR5	2.62E+07	KF716468	2.34E+05	24	M
DEURF08UG002	3.66E+09	URF_A1D	Uganda	2008	I	CCR5	5.65E+06	KF716504	8.21E+04	unk	M
DEURF14PK015	1.13E+10	URF_A1G	Pakistan	2014	VI	CCR5	8.84E+05	KU749414	1.23E+05	39	M
DEURF06CM001	1.35E+08	URF_01A 1G (A1, G, CRF01 AE)	CM	2006	unk	CCR5/CXCR4	4.93E+03	KF716464	7.74E+03	unk	unk
DEMBF09ES006	3.82E+09	BF	Spain	2009	acute	R5	2.48E+05	JX140661	1.48E+05	27	M



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#### Notes

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Date