



FINAL TECHNICAL REPORT

PROJECT NUMBER

306-01-01

ANTI-HIV EVALUATION OF FULLERENE-POLY-AMINOCAPROIC ACID

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Introduction

This final technical report summarizes the results of the *in vitro* anti-HIV-1 evaluations of fullerene-poly-aminocaproic acid. The test material was evaluated in parallel with Zidovudine (AZT) and Ritonavir (RTV) in fresh human peripheral blood mononuclear cells (PBMCs) against clinical Human Immunodeficiency Virus Type 1 (HIV-1) subtype A through G and O strains. The test agent was also evaluated in parallel with AZT and RTV for efficacy in MT-4 cells against HIV-1 strains resistant to AZT, Lamivudine (3TC), Efavirenz (EFZ) and RTV.

Material and Methods

Compounds:

Fullerene-poly-aminocaproic acid was provided by CISC Intelpharm as a dry powder and was solubilized at 40 mg/mL in dimethyl sulfoxide (DMSO) and stored at -20°C prior to use in the antiviral assays. Fullerene-poly-aminocaproic acid was evaluated at a 100 µg/mL high test concentration and serial half-log incremental dilutions to generate dose response curves in the *in vitro* antiviral assays. AZT, 3TC, EFZ and RTV were received from the NIH AIDS Research and Reagent Program (Germantown, MD) and were evaluated in parallel as control antiviral compounds in the assays.

Anti-HIV PBMC Assay:

Fresh human peripheral blood mononuclear cells (PBMCs) were obtained from a commercial source (Biological Specialty Corp., Allentown, PA) and were determined to be seronegative for HIV and hepatitis B virus (HBV). Depending on the volume of the donor blood received, the leukophoresed blood cells were washed several times with Dulbecco's phosphate buffered saline (PBS). After washing, the leukophoresed blood was diluted 1:1 with PBS and layered over 15 mL of Ficoll-Hypaque in a 50 mL conical centrifuge tube. These tubes were then centrifuged for 30 minutes at 600 X g. Banded PBMCs were gently aspirated from the resulting interface and subsequently washed three times with PBS by low speed centrifugation. After the final wash, cells were enumerated

by Trypan Blue dye exclusion and re-suspended in RPMI 1640 with 15% Fetal Bovine Serum (FBS), 2 mmol/L L-glutamine, 2 µg/mL phytohemagglutinin (PHA-P), 100 Units/mL penicillin and 100 µg/mL streptomycin and allowed to incubate for 72 hours at 37°C. After incubation, PBMCs were centrifuged and resuspended in tissue culture medium [RPMI 1640 with 15% FBS, 2 mmol/L L-glutamine, 100 U/mL penicillin, 100 µg/mL streptomycin and 3.6 ng/mL recombinant human interleukin-2 (IL-2)]. The cultures were then maintained until use by half culture volume change with fresh IL-2 containing tissue culture medium every 3 days.

For the PBMC assay, PHA-P stimulated PBMCs from three donors were pooled together to minimize the variability between individual donors, and resuspended in fresh tissue culture medium at 1×10^6 cells/mL and plated in the interior wells of a 96-well round bottom microtiter plate at 50 µL/well. Then, 100 µL of 2X concentrations of compound-containing medium was transferred to the round-bottom 96-well plate containing the cells in 50 µL of the medium.

Immediately following test material addition to the wells, 50 µL of a predetermined dilution of HIV-1 virus (prepared at 4X of final in-well concentration) was added, and mixed well. For infection, 50-150 TCID₅₀ (50% tissue culture infectious dose) of each virus was added per well (final multiplicity of infection = 0.05-0.10). PBMCs were exposed in triplicate to virus and cultured in the presence or absence of the test material at varying concentrations as described above in the 96-well microtiter plates. After 7 days in culture, HIV-1 replication was quantified by the measurement of cell free HIV-1 reverse transcriptase (RT) activity in the tissue culture supernatant. Wells with cells and virus alone were used for as negative and positive controls, respectively. Separate plates were identically prepared without virus addition for drug cytotoxicity studies using the tetrazolium dye XTT.

Virus Quantification by Reverse Transcriptase Activity Assay:

Virus production was quantified by assaying for reverse transcriptase in cell-free supernatants using a standard radioactive incorporation polymerization assay. Tritiated

thymidine triphosphate (NEN) (TTP) was purchased at 1 Ci/milliliter (mL) and 1 μ L (microliter) was used per enzyme reaction. Poly rA and oligo dT were prepared at concentrations of 0.5 mg/mL and 1.7 Units/mL, respectively, from a stock solution which was kept at -20°C. The RT reaction buffer was prepared fresh on a daily basis and consists of 125 μ L of 1 mol/L ethylene glycol tetraacetic acid (EGTA), 125 μ L of distilled water (dH₂O), 125 μ L of 20% Triton X-100, 50 μ L of 1 mol/L Tris (pH 7.4), 50 μ L of 1 mol/L dithiothreitol (DTT), and 40 μ L of 1 mol/L magnesium chloride (MgCl₂). For each reaction, 1 μ L of TTP, 4 μ L of dH₂O, 2.5 μ L of rAdT and 2.5 μ L of reaction buffer were mixed. Ten microliters of this reaction mixture was placed in a round bottom microtiter plate and 15 μ L of virus containing supernatant was added and mixed. The plate was incubated at 37°C in a humidified incubator and incubated for 90 minutes. Following reaction, 10 μ L of the reaction volume was spotted onto a DEAE filter mat in the appropriate plate format, washed 5 times for 5 minutes each in a 5% sodium phosphate buffer, 2 times for 1 minute each in distilled water, 2 times for 1 minute each in 70% ethanol, and then air dried. The dried filter mat was placed in a plastic sleeve and 4 mL of Opti-Fluor O was added to each sleeve. Incorporated radioactivity was quantified utilizing a Wallac 1450 Microbeta Trilux liquid scintillation counter.

XTT Staining for Cell Viability and Compound Cytotoxicity:

Cellular cytotoxicity (TC₅₀) concentrations for the test materials were derived by measuring the reduction of the tetrazolium dye XTT (2,3-bis(2-methoxy-4-nitro-5-sulfophenyl)-5-[(phenylamino)carbonyl]-2H-tetrazolium hydroxide) in replicate microtiter plates containing cell and compound without virus. XTT in metabolically active cells is metabolized by the mitochondrial enzyme nicotinamide adenine dinucleotide phosphate (NADPH) oxidase to a soluble formazan product. XTT solution was prepared daily as a stock of 1 mg/mL in PBS. Phenazine methosulfate (PMS) solution was prepared at 0.15 mg/mL in PBS and stored in the dark at -20°C. XTT/PMS stock was prepared immediately before use by adding 40 μ L of PMS per mL of XTT solution. Fifty μ L of XTT/PMS was added to each well of the plate and the plate incubated for 4 hr at 37°C. The 4 hour incubation has been empirically determined to be

within the linear response range for XTT dye reduction with the indicated numbers of cells for each assay. Adhesive plate sealers were used in place of the lids, the sealed plate was inverted several times to mix the soluble formazan product and the plate was read at 450 nm (650 nm reference wavelength) with a Molecular Devices SpectraMax Plus 384 96 well plate format spectrophotometer.

Data Analysis and Evaluation:

Microsoft Excel 2007 was used to analyze and graph data. Using Microsoft Excel, EC₅₀ (50% inhibition of virus replication), TC₅₀ (50% reduction in cell viability) and a therapeutic index (TI, TC₅₀/EC₅₀) were defined from the raw data. Raw data for both antiviral activity and toxicity with a graphic representation of the data are provided in a printout summarizing the individual compound activity. A relevant positive control compound was utilized for each of the antiviral assays.

Antiviral assays in Fresh Human Monocytes Macrophages:

Fresh human peripheral blood mononuclear cells (PBMCs) were obtained and processed through the Ficoll-hypaque centrifugation step as described above. Freshly separated PBMC's were suspended in DPBS plus 10% heat inactivated Human AB serum at 3 – 4 x 10⁶ cells/ml and plated in the interior wells of a 96 well flat bottom microplate at 100 µl/well. The plates were incubated at 37°C/5% CO₂ for 2 to 12 hours. RPMI 1640 supplemented with 10% FBS, 2mM L-glutamine, 100 U/ml penicillin and 100 µg/ml streptomycin was added at 100 µL/well and the plates were incubated for 2 days. Following incubation, the interior wells of the plates were gently washed with DPBS and complete RPMI 1640 was added at 200 µL/well and the plates were incubated for 5 to 7 days. The plates were maintained by medium replacement at least once a week. Visual examination for contamination and monolayer confluency was performed prior to feeding manipulations.

Before setting up the assay, the cell monolayer was gently washed with DPBS several times to eliminate residual non-adherent PBMCs. After the final wash, 50µL of complete RPMI 1640 was placed in each well and 100µL of 2X concentrations of compound-

containing media was transferred to the flat-bottom 96-well plate containing the cells. A predetermined dilution of HIV-1 virus (prepared at 4X of final in well concentration) was added to appropriate wells in a 50 μ L volume and mixed well. For infection, 50-150 TCID₅₀ of each virus was added per well (final MOI=0.05-0.10). Each plate contained cell control wells (cells only), virus control wells (cells plus virus), drug toxicity control wells (cells plus drug only) as well as experimental wells (drug plus cells plus virus). Following 24 hour incubation, virus was washed off the plates with DPBS. Complete RPMI 1640 was added back to the washed wells in a 100 μ L volume. A 100 μ l volume of 2X concentration of compound-containing media was added to the plate. After 7 days in culture, HIV-1 replication was quantified by the measurement of HIV-1 p24 content. Separate plates were identically prepared without virus for drug cytotoxicity studies using the tetrazolium dye.

Virus Quantification by HIV p24 ELISA:

Following the seven days incubation, samples from each assay well were harvested and evaluated for virus production by analysis of p24 antigen content by commercial ELISA. The assay kit (murine monoclonal antibody to HIV-1 p24 antigen coated onto microtiter strip wells) was purchased from PerkinElmer (Waltham, MA). The ELISA was performed exactly according to the manufacturer's instructions which were provided with the kit. Standard and test samples were diluted appropriately and added in a 200 μ L volume to the coated ELISA plate wells. The plate was incubated at 37°C for 1 hour and then washed six times with potassium phosphate buffer using a Skatron Plate Washer (Molecular Devices). Biotinylated human anti-HIV-1 IgG was prepared at room temperature and then added to each well as appropriate and incubated at 37°C for 1 hour. Following incubation, the plate was washed again and streptavidin-horseradish peroxidase (200 μ L) was added to each well as appropriate and incubated at 37°C for 30 minutes. Following the incubation, TMB substrate was added to each well on the plate for 30 minutes and 4N sulfuric acid solution was added to stop color development. The plates were read spectrophotometrically at wavelengths 450/570 within 30 minutes. The quantity of HIV-1 p24 antigen in each test sample was determined by comparing its absorbance to that of the control standards using Softmax (Molecular Devices) software.

XTT Staining for Cell Viability and Compound Cytotoxicity:

Following seven days incubation of the monocytes, toxicity of the test and control compounds to the target cells was quantified as described above by measuring the reduction of the tetrazolium dye XTT (2,3-bis(2-methoxy-4-nitro-5-sulfohenyl)-5-[(phenylamino)carbonyl]-2H-tetrazolium hydroxide) in replicate microtiter plates containing cell and compound without added virus.

Data Analysis and Evaluation:

Microsoft Excel 2007 was used to analyze and graph data. Using Microsoft Excel, calculated TC_{25, 50, 95} (% reduction in cell viability) values, EC_{25, 50, 95} (% inhibition of virus replication) values, and TI_{25, 50, 95} (therapeutic index, TC/EC) values were provided. Raw data for both antiviral activity and toxicity with a graphic representation of the data are provided in a printout summarizing the individual compound activity. AZT was provided as a relevant positive control compounds for the antiviral assay.

Anti-HIV-1 Cytoprotection Assay:

Cell Preparation - CEM-SS cells were passaged in T-75 flasks prior to use in the antiviral assay. On the day preceding the assay, the cells were split 1:2 to assure they were in an exponential growth phase at the time of infection. Total cell and viability quantification was performed using a hemocytometer and Trypan Blue dye exclusion. Cell viability was greater than 95% for the cells to be utilized in the assay. The cells were resuspended at 5×10^4 cells per ml in tissue culture medium and added to the drug-containing microtiter plates in a volume of 50 μ L.

Virus Preparation – The viruses used for the assay were wild type HIV-1_{IIIB}, wild type HIV-1_{NL4-3}, AZT-resistant NL4-3_{4xAZT}, 3TC-resistant NL4-3_{M184V}, RTV-resistant NL4-3_{V82A/I84V}, and EFZ-resistant A17_{IIIB_{K103N/Y181C}}. The NL4-3 plasmid was obtained from the NIAID AIDS Research and Reference Reagent Program and amino acid changes in the reverse transcriptase or protease regions were introduced by site-directed mutagenesis. The A17 strain of HIV-1_{IIIB} conferring resistance to EFZ was obtained from the NIH AIDS Research and Reference Reagent Program. Stock virus pools of

each virus were produced in CEM-SS cells. A pretitered aliquot of virus was removed from the freezer (-80°C) and allowed to thaw slowly to room temperature in a biological safety cabinet. Virus was diluted into tissue culture medium such that the amount of virus added to each well in a volume of 50 µL was the amount determined to yield 85 to 95% cell killing at 6 days post-infection.

Plate Format – Each plate contains cell control wells (cells only), virus control wells (cells plus virus), drug toxicity wells (cells plus drug only), drug colorimetric control wells (drug only) as well as experimental wells (drug plus cells plus virus). Samples were tested in triplicate with eleven half-log dilutions per compound.

Efficacy and Toxicity Quantification by XTT Assay - Following incubation at 37°C in a 5% CO₂ incubator, the test plates were stained with the tetrazolium dye XTT (2,3-bis(2-methoxy-4-nitro-5-sulfophenyl)-5-[(phenylamino)carbonyl]-2H-tetrazolium hydroxide) as described above.

Data Analysis - Raw data was collected from the Softmax Pro 4.6 software and imported into a Microsoft Excel XLfit4 spreadsheet for analysis by four parameter curve fit calculations to provide TC_{25, 50, 95} (% reduction in cell viability) values, EC_{25, 50, 95} (% inhibition of virus replication) values, and TI_{25, 50, 95} (therapeutic index, TC/EC) values.

Results

Anti-HIV Evaluations in Fresh Human PBMC Assay:

Fullerene-poly-aminocaproic acid was evaluated in parallel with AZT and RTV against low passage human clinical HIV-1 subtype viruses (A through G and O) in fresh human PBMCs. The results of these assays are summarized in **Table 1** and the raw data from the experiments are presented in **Appendix I**. The graphical representation of these data compares the antiviral efficacy and cellular toxicity expressed as a percent of the appropriate cell and virus controls.

The anti-HIV assays met our internal validation and standardization criteria. AZT was evaluated in parallel as a positive control compound for the anti-HIV assay due to its sensitivity to small changes in the virus multiplicity of infection, allowing us to maintain the virus inoculum at its most sensitive level for the antiviral assays. AZT yielded EC₅₀ values ranging from 3 to 10 nM against the clinical HIV-1 isolates, which fall within the acceptable range of activity (1-10 nM) for this control compound. Ritonavir was evaluated as an additional positive control compound. Initial assays performed with an older stock of ritonavir (RTV) yielded much higher EC₅₀ values than expected, so all of the antiviral assays were repeated with a new stock of RTV. The new stock of RTV yielded EC₅₀ values ranging from 11- 60 nM against all of the clinical HIV-1 isolates, except for Group O strain BCF01 (EC₅₀ = 790 nM).

Fullerene-poly-aminocaproic acid was active against all of the low passage clinical HIV-1 strains evaluated with EC₅₀ values ranging from 0.42 to 4.38 µg/mL. The fullerene-poly-aminocaproic acid thus inhibited all 8 strains of virus evaluated with a mean EC₅₀ value of 2.56 +/- 1.12 µg/mL. Further evaluation of the activity of the compounds against the 16 strains of virus indicated that the 95% inhibition of virus replication occurred at a concentration ranging from 6.27 to 29.3 µg/mL, with a mean 95% inhibitory concentration of 14.8 +/- 7.92 µg/mL. The test compound was found to be non-toxic to fresh human PBMCs in all assays except one, where the TC₅₀ concentration was defined as 67.3 µg/mL, yielding a therapeutic index of 20.5 and 31.3.

Table 1: Anti-HIV PBMC Assays

HIV-1 Subtype	Virus (Coreceptor Usage)	Fullerene (µg/ml)			Ritonavir (µM)			AZT (µM)		
		EC ₅₀	TC ₅₀	TI	EC ₅₀	TC ₅₀	TI	EC ₅₀	TC ₅₀	TI
A	92RW016 (R5)	1.92	>100.0	>52.1	0.63	>1.0	>1.6	0.011	>1.0	>88.1
		4.38	>100.0	>22.83	0.011	>1.0	>94.3	0.0099	>1.0	>100.7
B	92HT596 (R5X4)	3.58	>100.0	>27.9	0.89	>1.0	>1.1	0.016	>1.0	>61.4
		3.29	67.3	20.46	0.06	>10.0	>163.7	0.01	>1.0	>96.2
C	93MW959 (R5)	1.31	>100.0	>76.3	0.28	>1.0	>3.6	0.007	>1.0	>142.3
		2.35	>100.0	>42.6	0.015	>1.0	>66.2	0.007	>1.0	>143.4
D	92UG001 (R5X4)	1.8	>100.0	>55.6	0.91	>1.0	>1.10	0.0044	>1.0	>225.7
		2.54	>100.0	>39.4	0.019	>1.0	>54.1	0.0035	>1.0	>284.9
E	CMU02	3.35	>100.0	>29.9	>1.0	>1.0	--	0.0076	>1.0	>131.2

	(X4)	2.15	67.3	31.3	0.057	>10.0	>176.4	0.003	>1.0	>311.5
F	93BR020 (R5X4)	1.71	>100.0	>58.5	0.39	>1.0	>2.60	0.0034	>1.0	>297.6
		2.45	>100.0	>40.8	0.031	>1.0	>31.9	0.0049	>1.0	>209.2
G	G3 (R5)	0.96	>100.0	>103.8	>1.0	>1.0	--	0.0046	>1.0	>219.3
		0.42	67.3	161.0	0.035	>10.0	>282.5	<0.003	>1.0	>333.3
O	BCF01 (R5)	1.09	>100.0	>91.7	>1.0	>1.0	--	0.0084	>1.0	>119.2
		2.92	67.3	23.1	0.79	>10.0	>12.7	0.0089	>1.0	>112.9

EC₅₀ (50%, inhibition of virus replication)

TC₅₀ (50% reduction in cell viability)

TI (therapeutic index, TC₅₀/EC₅₀)

Anti-HIV Monocyte/Macrophage Assay:

Fullerene-poly-aminocaproic acid was evaluated in parallel with AZT and RTV against HIV-1_{BaL} in fresh human monocyte/macrophages. The results of these assays are summarized in **Table 2** and the raw data from the experiments are presented in **Appendix II**. The graphical representation of these data compares the antiviral efficacy and cellular toxicity expressed as a percent of the appropriate cell and virus controls.

AZT and freshly solubilized RTV yielded EC₅₀ values of less than 3 nM and 90 nM, respectively, against the CCR5-tropic BaL strain of HIV-1 utilized in these assays.

Fullerene-poly-aminocaproic acid yielded an EC₅₀ value of 12.9 µg/mL and was nontoxic up to the high test concentration of 100 µg/mL. The calculated EC₉₅ concentration for the test compound in the antiviral assay was 29.2 µg/mL.

Table 2: Anti-HIV Monocyte/Macrophage Assay

HIV-1 Subtype	Virus (Coreceptor Usage)	FPA (µg/ml)			Ritonavir (µM)			AZT (µM)		
		EC ₅₀	TC ₅₀	TI	EC ₅₀	TC ₅₀	TI	EC ₅₀	TC ₅₀	TI
B	BaL (R5)	12.9	>100	>7.75	0.09	>1.0	>10.6	<0.003	>1.0	>333

Anti-HIV Cytoprotection Evaluations:

Fullerene-poly-aminocaproic acid, AZT and RTV were evaluated for activity against wild type HIV-1_{III_B} and HIV-1_{NL4-3} and viruses resistant to AZT, 3TC, EFZ and RTV in MT-4 cells. 3TC and EFZ were evaluated as negative control compounds against NL4-3_{M184V} and HIV-1 III_B_{K103N/Y181C}, respectively. The results of these assays are summarized in **Table 3** and the raw data from the experiments are presented in **Appendix III**. The graphical representation of these data compares the antiviral efficacy and cellular toxicity expressed as a percent of the appropriate cell and virus controls.

AZT yielded EC₅₀ values ranging from 0.5 to 1 nM against the wild type and drug resistant HIV-1 strains, except for NL4-3_{4xAZT} virus which was 450-fold resistant to AZT. Ritonavir yielded EC₅₀ values ranging from 20 to 130 nM against the wild type and drug resistant HIV-1 strains, except for NL4-3_{V82A/I84V} virus which was greater than 17-fold resistant to RTV. Fullerene-poly-aminocaproic acid was active against the wild type and drug resistant viruses evaluated with EC₅₀ values ranging from 0.48 to 1.89 µg/mL with a mean EC₅₀ concentration of 0.78 +/- 0.55 µg/mL and a mean EC₉₅ value of 1.33 +/- 0.93 µg/mL. 3TC and EFZ were greater than 250-fold and 35-fold resistant to NL4-3_{M184V} virus and III_B_{K103N/Y181C} virus, respectively.



Table 3: Cross Resistance Evaluations

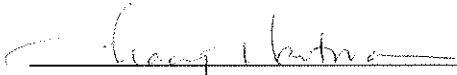
Compound	CEM-SS/HIV-1 _{IIIB}		MT4/HIV-1 _{NI.43}		MT4/HIV-1 _{IA17 KI03NA181C}		MT4/HIV-1 _{NI.43 MI84V}		MT4/HIV-1 _{NI.43 4kAZT}		MT4/HIV-1 _{NI.43 Y82A/I83V}						
	EC ₅₀	TC ₅₀	TI	EC ₅₀	TI	EC ₅₀	TI	EC ₅₀	TI	EC ₅₀	TI	EC ₅₀	TI				
AZT (μM)	0.002	>0.1	>50.0	0.001	>100	0.0005	>0.1	>200	0.0006	>0.1	>167	0.45	>1.0	>2.22	0.0009	>0.1	>111
Ritonavir (μM)	0.21	>1.0	>4.76	0.06	>16.7	0.13	>1.0	>7.69	0.02	>0.1	>5.0	0.02	>0.1	>5.0	>1.0	>1.0	---
Fullerene (μg/mL)	1.89	>100	>52.9	0.51	>196	0.48	>100	>208	0.63	>100	>159	0.55	>100	>182	0.59	>100	>169
3TC (μM)	ND	ND	ND	0.04	>10.0	>250	ND	>10.0	>10.0	>10.0	---	ND	ND	ND	ND	ND	ND
Efavirenz (μM)	ND	ND	ND	0.002	>0.1	>50.0	>1.0	>14.3	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND: Not Done

Discussion

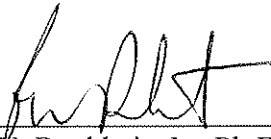
Fullerene-poly-aminocaproic acid was active in fresh human PBMCs and the established cell line CEM-SS against a range of wild type HIV-1 strains with a mean EC_{50} value of 2.23 $\mu\text{g}/\text{mL}$ and lack of cytotoxicity up to 100 $\mu\text{g}/\text{mL}$. Against these wild type strains the mean EC_{95} concentration was determined to be 14.8 +/- 7.92 $\mu\text{g}/\text{mL}$. The EC_{50} value of fullerene-poly-aminocaproic acid in fresh human monocyte-macrophages was 12.9 $\mu\text{g}/\text{mL}$. Fullerene-poly-aminocaproic acid was active in the established cell line MT-4 against a panel of drug resistant HIV-1 strains with a mean EC_{50} value of 0.6 $\mu\text{g}/\text{mL}$ and a mean EC_{95} value of 1.33 $\mu\text{g}/\text{mL}$. Lack of cross resistance to HIV strains conferring resistance to AZT (NRTI), EFZ (NNRTI) and RTV (PI) indicates a distinct mechanism of antiviral action for fullerene-poly-aminocaproic acid when compared with these approved HIV drugs. Additional preclinical IND-directed studies should be initiated for fullerene-poly-aminocaproic acid.

Submitted by:



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Reviewed and Approved by:



Robert W. Buckheit, Jr., Ph.D.
President and Chief Executive Officer
Principal Investigator

APPENDIX I

Anti-HIV-1 PBMC Assay Results

INHIBITION OF CCR5 TROPIC CLADE A HIV-1_{92RW016} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	7726.5	10239.0	7185.0	1549.0	492.0	372.0	340.0
SAMPLE 2	8382.5	9082.0	5277.0	3727.0	502.0	364.0	308.0
SAMPLE 3	10694.0	9012.0	6236.0	4109.0	472.0	414.0	354.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.8117	2.6984	2.1758	1.7804	1.8728	2.0398	2.2751
SAMPLE 2	2.3060	2.5971	1.6791	1.5677	1.4806	1.8393	2.0363
SAMPLE 3	2.6320	2.4576	1.7586	1.9151	1.5730	2.0176	1.6801

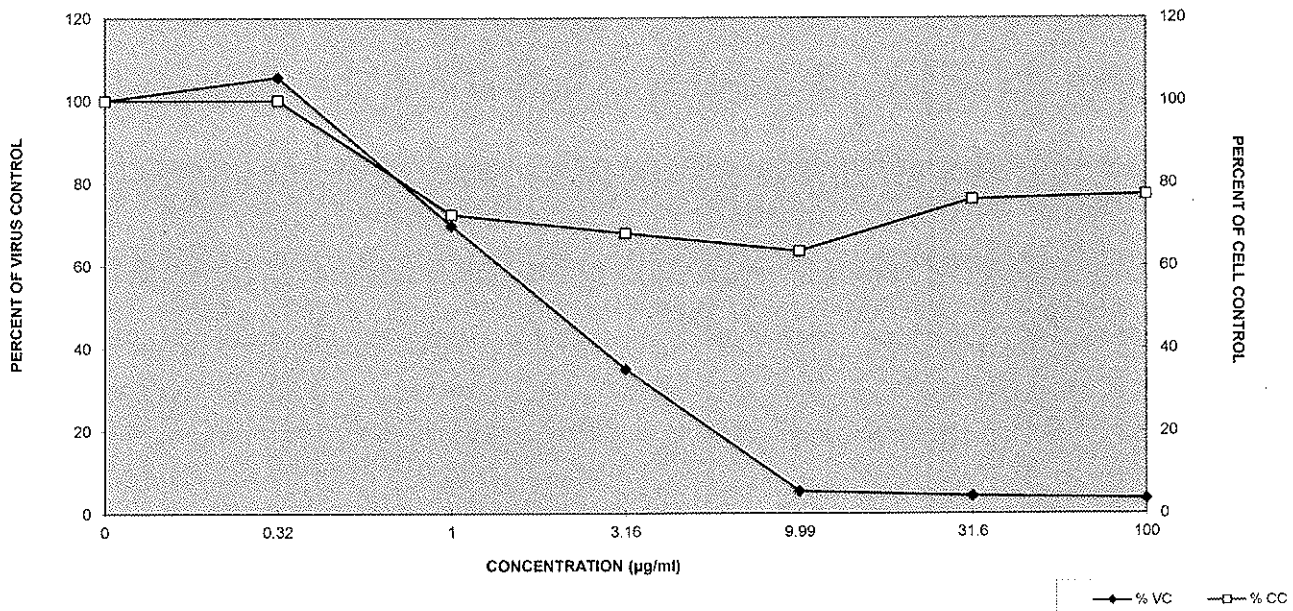
Virus:	HIV-1	Clade:	A	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	92RW016	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	0.847	1.92	15.8
TC (µg/ml)	0.90	>100	>100
Therapeutic Index (TI)	1.06	>52.08	>6.33

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	8934.3	1558.815	100.00	2.583	0.25635281	100.00
0.32	9444.3	689.09095	105.71	2.584	0.12090394	100.04
1	6232.7	954.00437	69.76	1.871	0.26679798	72.44
3.16	3128.3	1381.0146	35.01	1.754	0.17515333	67.91
9.99	488.7	15.275252	5.47	1.642	0.20503603	63.57
31.6	383.3	26.857649	4.29	1.966	0.10991207	76.09
100	334.0	23.579652	3.74	1.997	0.29942414	77.31

INHIBITION OF CCR5 TROPIC CLADE A HIV-1_{92RW016} IN HUMAN PBMCs BY FPA



INHIBITION OF CCR5 TROPIC CLADE A HIV-1_{92RW016} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	7726.5	12485.0	8232.0	11329.0	10728.0	6515.0	1784.0
SAMPLE 2	8382.5	8959.0	9915.0	6804.0	10465.0	9014.0	3414.0
SAMPLE 3	10694.0	11017.0	7715.0	8414.0	10916.0	5453.0	2935.0

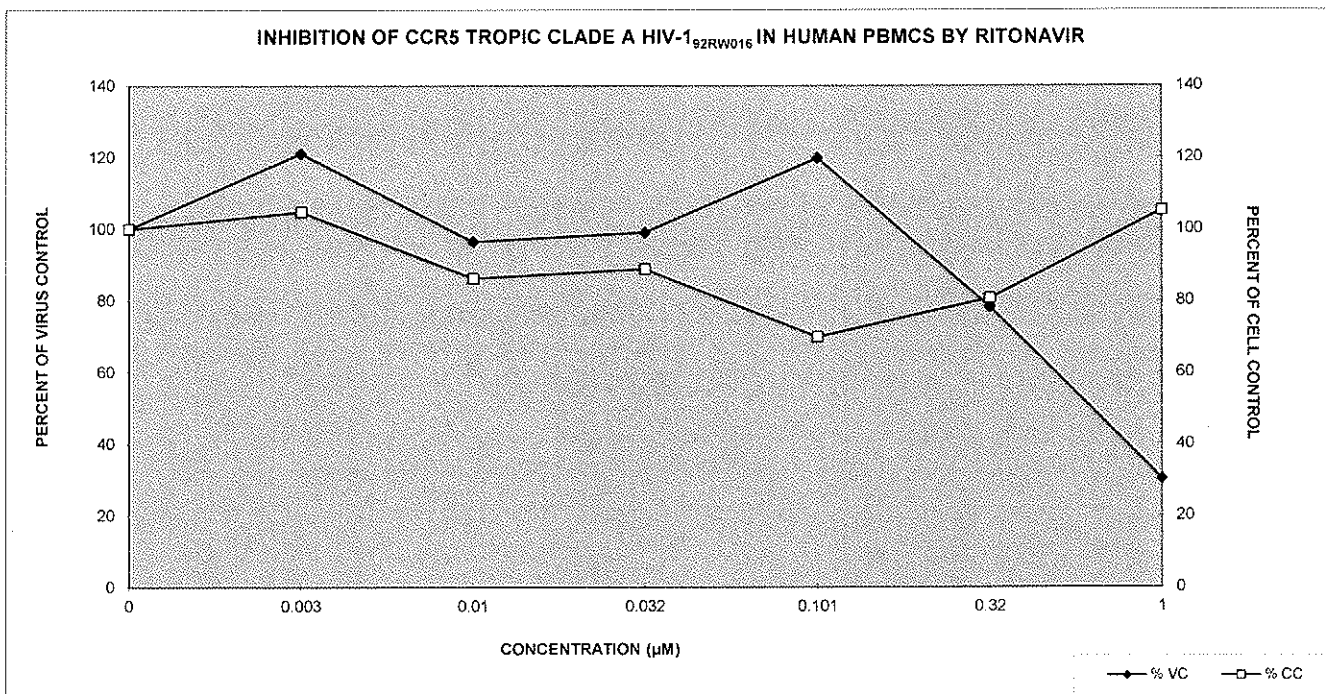
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.7324	2.0992	2.2215	1.7945	2.0948	2.9236
SAMPLE 2	2.3060	2.6502	2.2991	2.5874	2.0357	2.2827	2.6008
SAMPLE 3	2.6320	2.7406	2.2893	2.0741	1.5853	1.8759	2.6306

Virus:	HIV-1	Clade:	A	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	92RW016	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.346	0.627	>1.0
TC (µM)	0.07	>1.0	>1.0
Therapeutic Index (TI)	0.20	>1.59	1

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	8934.3	1558.81496	100.00	2.583	0.256353	100.00
0.003	10820.3	1771.20787	121.11	2.708	0.049994	104.82
0.01	8620.7	1150.34618	96.49	2.229	0.11269	86.29
0.032	8849.0	2293.64884	99.04	2.294	0.264287	88.82
0.101	10703.0	226.536973	119.80	1.805	0.225389	69.88
0.32	6994.0	1828.18517	78.28	2.084	0.203597	80.69
1	2711.0	837.769061	30.34	2.718	0.178389	105.23



INHIBITION OF CCR5 TROPIC CLADE A HIV-1_{92RW016} IN HUMAN PBMCs

BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	7726.5	9550.0	3136.0	1479.0	1069.0	793.0	499.0
SAMPLE 2	8382.5	7420.0	6608.0	2122.0	700.0	520.0	396.0
SAMPLE 3	10694.0	7191.0	4577.0	1702.0	829.0	678.0	496.0

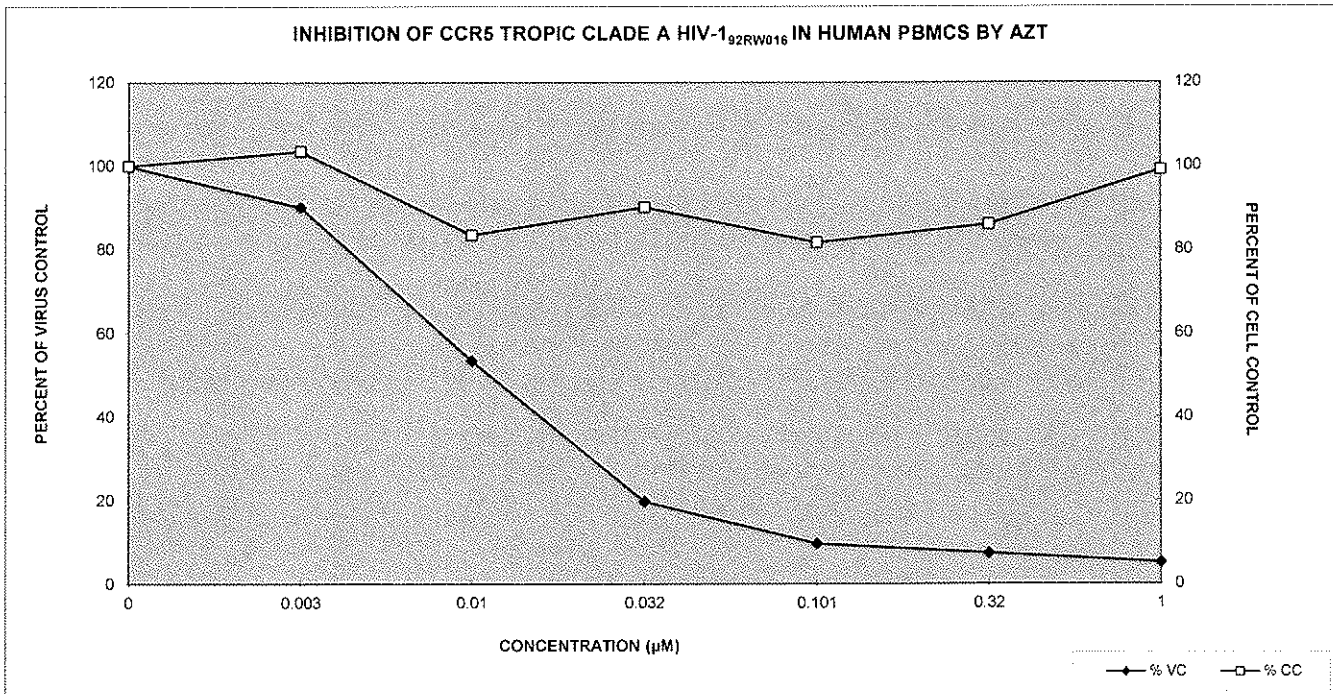
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.6920	2.1698	2.2944	2.0121	1.8983	2.2751
SAMPLE 2	2.3060	2.6313	2.1969	2.3375	2.2415	2.3045	2.9041
SAMPLE 3	2.6320	2.6995	2.1024	2.3538	2.0771	2.4681	2.5008

Virus: HIV-1 Clade: A Technician: Lu Yang Setup Date: 5/28/13
 Strain: 92RW016 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/4/13
 Tropism: CCR5 Project #: 306-01-01 Client: CJSC

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	0.00493	0.0113	>1.0
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>202.84	>88.50	!

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	8934.3	1558.81496	100.00	2.583	0.256353	100.00
0.003	8053.7	1300.91135	90.14	2.674	0.037399	103.52
0.01	4773.7	1744.33493	53.43	2.156	0.048661	83.48
0.032	1767.7	326.490939	19.79	2.329	0.030691	90.14
0.101	866.0	187.261849	9.69	2.110	0.118235	81.69
0.32	663.7	137.063246	7.43	2.224	0.293381	86.08
1	463.7	58.6202468	5.19	2.560	0.318651	99.10



INHIBITION OF CCR5 TROPIC CLADE A HIV-1_{92RW016} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	11162.5	13906.0	10656.0	7811.0	1055.0	554.0	466.0
SAMPLE 2	10844.0	13854.0	10438.0	7448.0	3176.0	520.0	410.0
SAMPLE 3	13031.5	13677.0	12256.0	6705.0	2055.0	366.0	336.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.2185	2.7399	2.1703	2.5250	2.1383	1.7267	1.7505
SAMPLE 2	1.8423	2.7282	2.0899	2.5461	1.9928	1.7973	1.8690
SAMPLE 3	2.2118	2.7589	2.3185	2.3703	1.9477	1.9701	1.8427

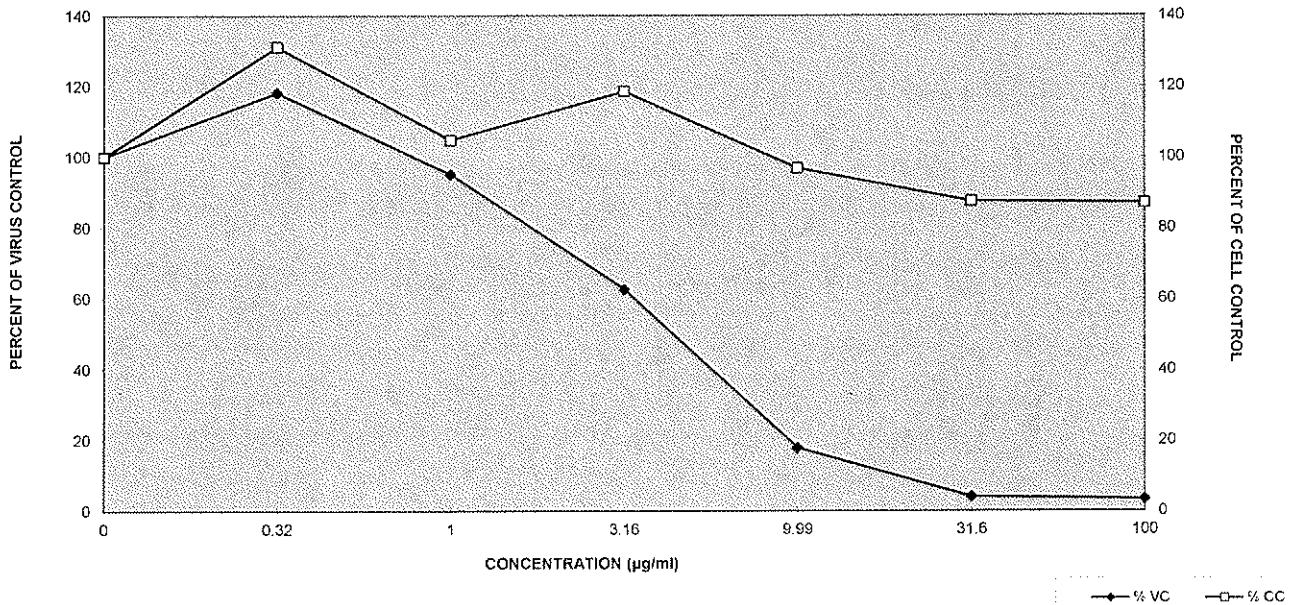
Virus:	HIV-1	Clade:	A	Technician:	Lu Yang	Setup Date:	6/25/13
Strain:	92RW016	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	7/2/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	2.04	4.38	29.3
TC (µg/ml)	>100	>100	>100
Therapeutic Index (TI)	>49.02	>22.83	>3.41

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	11679.3	1181.7896	100.00	2.091	0.21527629	100.00
0.32	13812.3	120.05138	118.26	2.742	0.01549398	131.16
1	11116.7	992.69398	95.18	2.193	0.11596361	104.88
3.16	7321.3	563.77507	62.69	2.480	0.09598866	118.63
9.99	2095.3	1061.0751	17.94	2.026	0.09960976	96.91
31.6	480.0	100.17984	4.11	1.831	0.12522497	87.59
100	404.0	65.207362	3.46	1.821	0.06222912	87.08

INHIBITION OF CCR5 TROPIC CLADE A HIV-1_{92RW016} IN HUMAN PBMCs BY FPA



INHIBITION OF CCR5 TROPIC CLADE A HIV-1_{92RW016} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	11162.5	13057.0	6388.0	682.0	490.0	442.0	394.0
SAMPLE 2	10844.0	11419.0	6606.0	640.0	470.0	420.0	336.0
SAMPLE 3	13031.5	11561.0	5307.0	504.0	346.0	434.0	328.0

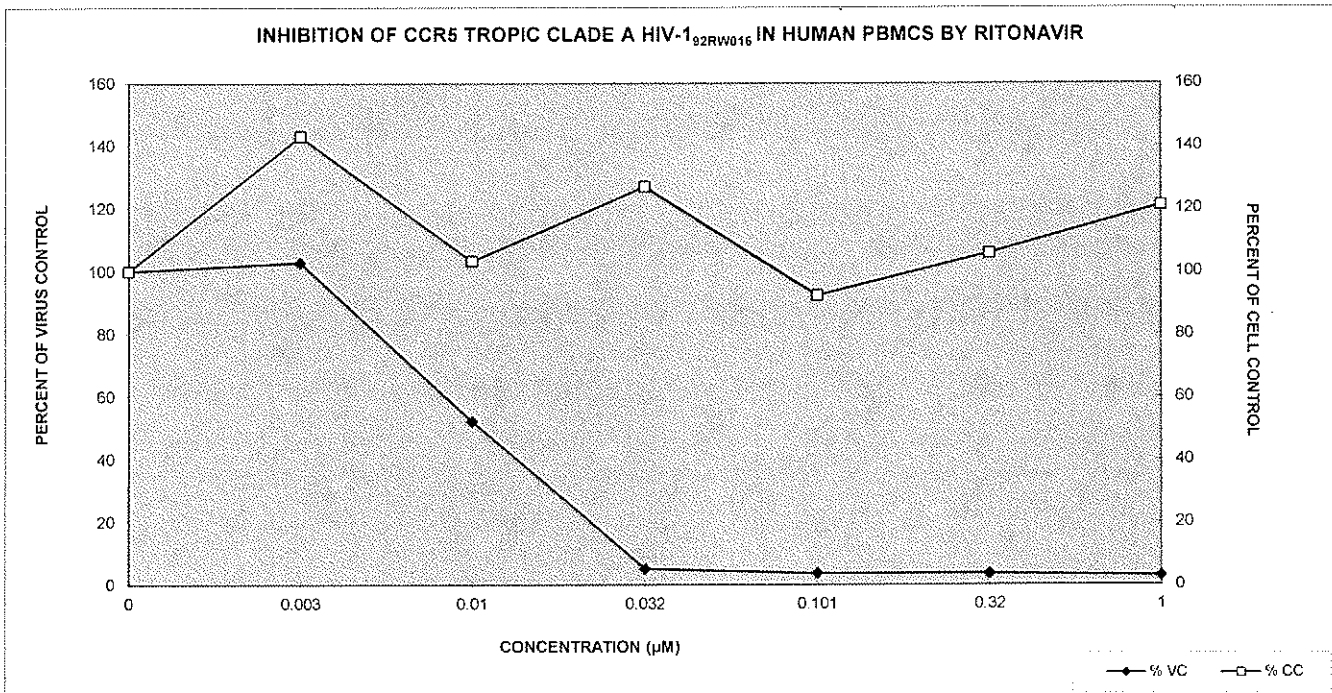
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.2185	3.0065	2.3378	2.8696	1.9534	2.1657	2.6133
SAMPLE 2	1.8423	2.9660	2.0735	2.5955	1.9570	2.3431	2.4286
SAMPLE 3	2.2118	3.0012	2.0663	2.5043	1.8821	2.1305	2.5569

Virus:	HIV-1	Clade:	A	Technician:	Lu Yang	Setup Date:	6/25/13
Strain:	92RW016	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	7/2/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CISC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.00582	0.0106	0.0377
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>171.82	>94.34	>26.53

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	11679.3	1181.78957	100.00	2.091	0.215276	100.00
0.003	12012.3	907.489578	102.85	2.991	0.022013	143.06
0.01	6100.3	695.639514	52.23	2.159	0.154714	103.27
0.032	608.7	93.0447921	5.21	2.656	0.190128	127.05
0.101	435.3	78.0085465	3.73	1.931	0.042243	92.35
0.32	432.0	11.1355287	3.70	2.213	0.113951	105.85
1	352.7	36.0185138	3.02	2.533	0.094654	121.14



INHIBITION OF CCR5 TROPIC CLADE A HIV-1_{92RW016} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	11162.5	8115.0	5361.0	2816.0	1061.0	712.0	434.0
SAMPLE 2	10844.0	9047.0	6332.0	3325.0	916.0	724.0	436.0
SAMPLE 3	13031.5	8151.0	5780.0	2876.0	1143.0	628.0	460.0

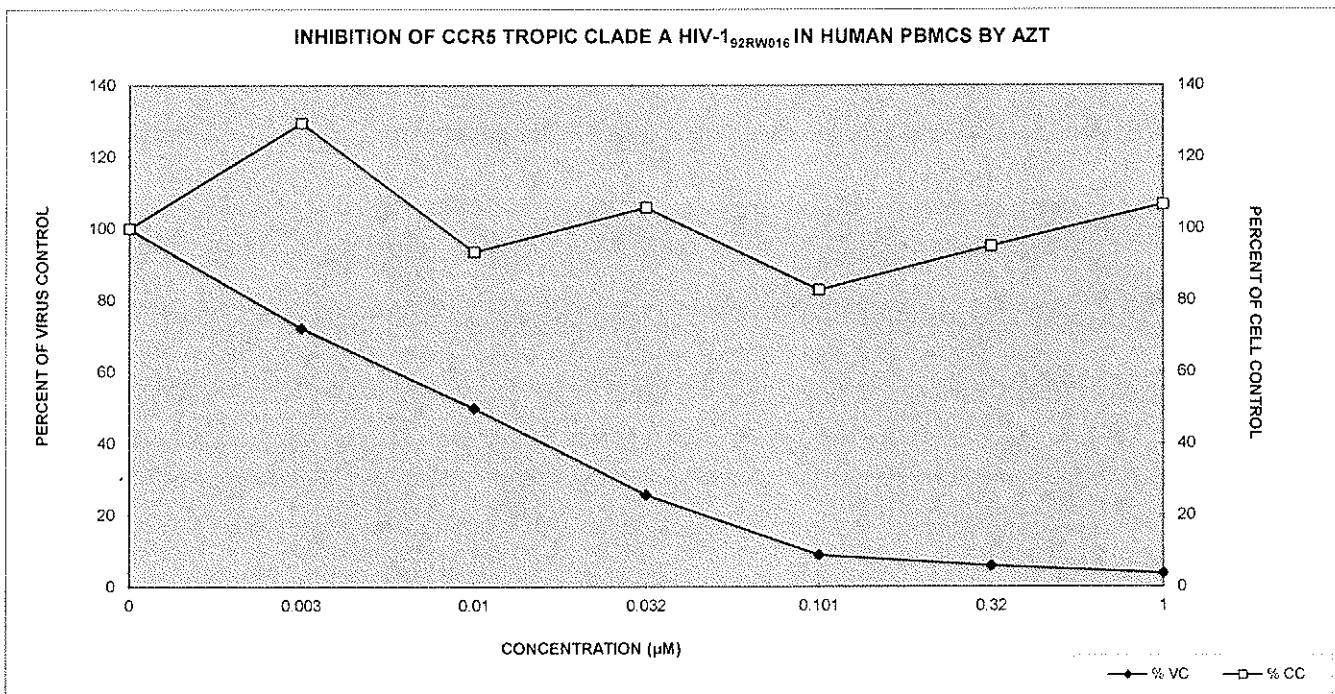
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.2185	2.8971	2.0651	2.3076	1.7804	2.0949	1.7505
SAMPLE 2	1.8423	2.6652	2.0317	2.0823	1.7156	2.0949	2.6160
SAMPLE 3	2.2118	2.5591	1.7708	2.2511	1.7004	1.7756	2.3241

Virus:	HIV-1	Clade:	A	Technician:	Lu Yang	Setup Date:	6/25/13
Strain:	92RW016	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	7/2/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	<0.00300	0.00993	0.519
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>333.33	>100.70	>1.93

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	11679.3	1181.78957	100.00	2.091	0.215276	100.00
0.003	8437.7	528.00505	72.24	2.707	0.172858	129.47
0.01	5824.3	487.015742	49.87	1.956	0.16114	93.54
0.032	3005.7	278.173207	25.73	2.214	0.117222	105.87
0.101	1040.0	114.947814	8.90	1.732	0.042485	82.84
0.32	688.0	52.3067873	5.89	1.988	0.184348	95.10
1	443.3	14.4683563	3.80	2.230	0.440342	106.66



INHIBITION OF R5X4 TROPIC CLADE B HIV-1_{92HT596} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	47570.0	47885.0	32728.0	26594.0	15132.0	274.0	250.0
SAMPLE 2	49439.5	49439.0	35013.0	23421.0	8585.0	296.0	288.0
SAMPLE 3	51105.5	44557.0	37463.0	28457.0	14166.0	306.0	266.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.8117	2.6984	2.1758	1.7804	1.8728	2.0398	2.2751
SAMPLE 2	2.3060	2.5971	1.6791	1.5677	1.4806	1.8393	2.0363
SAMPLE 3	2.6320	2.4576	1.7586	1.9151	1.5730	2.0176	1.6801

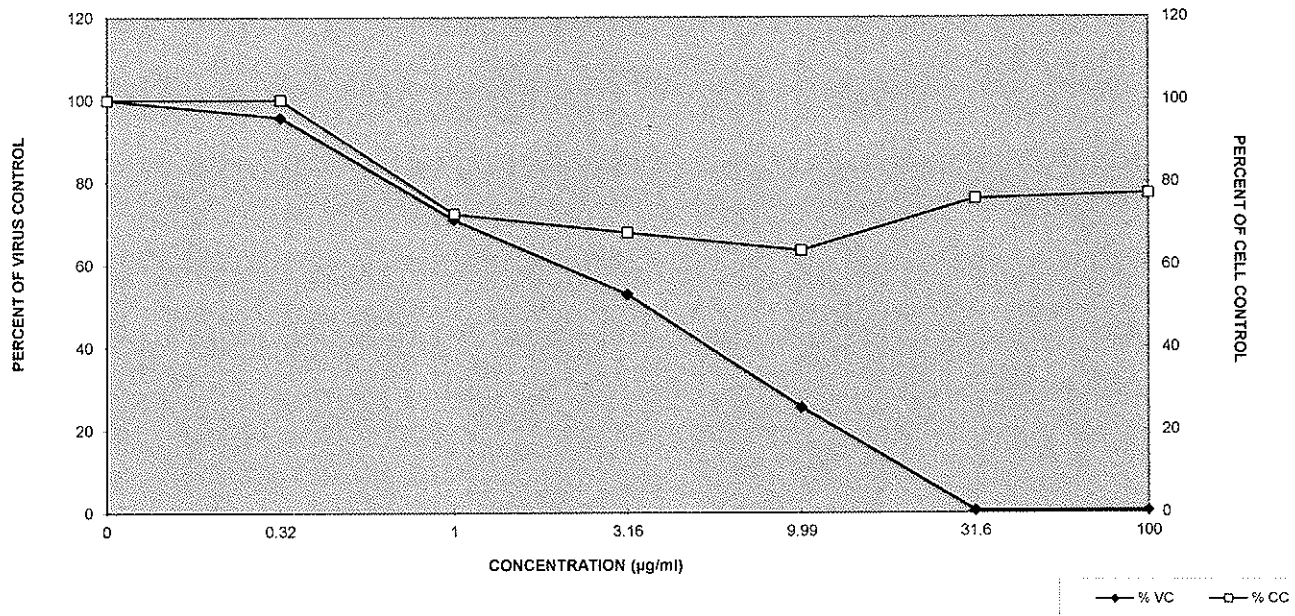
Virus:	HIV-1	Clade:	B	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	92HT596	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	R5X4	Project #:	306-01-01	Client:	CISC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	0.833	3.58	25.8
TC (µg/ml)	0.90	>100	>100
Therapeutic Index (TI)	1.08	>27.93	>3.88

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	49371.7	1768.7258	100.00	2.583	0.25635281	100.00
0.32	47293.7	2494.1406	95.79	2.584	0.12090394	100.04
1	35068.0	2367.9791	71.03	1.871	0.26679798	72.44
3.16	26157.3	2546.2389	52.98	1.754	0.17515333	67.91
9.99	12627.7	3534.212	25.58	1.642	0.20503603	63.57
31.6	292.0	16.370706	0.59	1.966	0.10991207	76.09
100	268.0	19.078784	0.54	1.997	0.29942414	77.31

INHIBITION OF R5X4 TROPIC CLADE B HIV-1_{92HT596} IN HUMAN PBMCs BY FPA



INHIBITION OF R5X4 TROPIC CLADE B HIV-1_{92HT596} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	47570.0	46171.0	47407.0	46894.0	45801.0	46977.0	20461.0
SAMPLE 2	49439.5	38698.0	37764.0	45237.0	45118.0	38864.0	17913.0
SAMPLE 3	51105.5	47506.0	43850.0	44465.0	43027.0	49883.0	28771.0

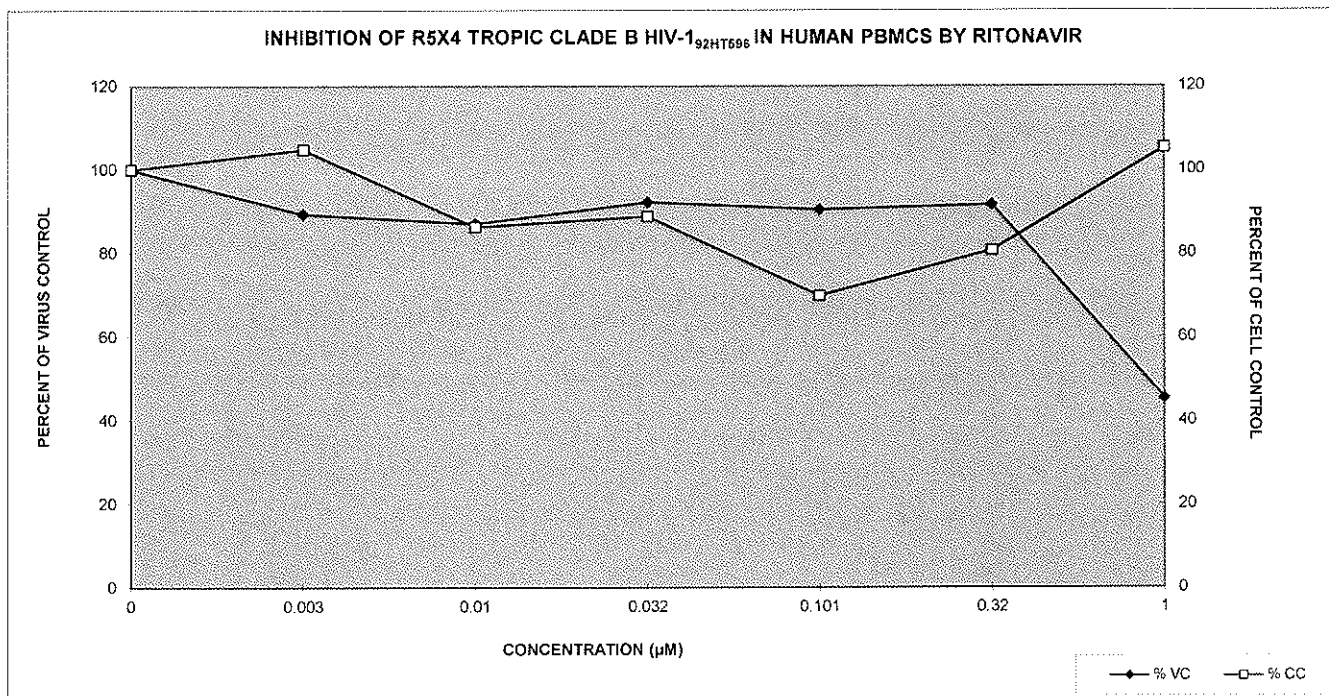
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.7324	2.0992	2.2215	1.7945	2.0948	2.9236
SAMPLE 2	2.3060	2.6502	2.2991	2.5874	2.0357	2.2827	2.6008
SAMPLE 3	2.6320	2.7406	2.2893	2.0741	1.5853	1.8759	2.6306

Virus:	HIV-1	Clade:	B	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	92HT596	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	R5X4	Project #:	306-01-01	Client:	CISC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.482	0.891	>1.0
TC (µM)	0.07	>1.0	>1.0
Therapeutic Index (TI)	0.15	>1.12	1

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	49371.7	1768.72584	100.00	2.583	0.256353	100.00
0.003	44125.0	4747.08363	89.37	2.708	0.049994	104.82
0.01	43007.0	4876.45865	87.11	2.229	0.11269	86.29
0.032	45532.0	1241.07977	92.22	2.294	0.264287	88.82
0.101	44648.7	1445.32845	90.43	1.805	0.225389	69.88
0.32	45241.3	5710.86634	91.63	2.084	0.203597	80.69
1	22381.7	5678.09487	45.33	2.718	0.178389	105.23



INHIBITION OF R5X4 TROPIC CLADE B HIV-1_{92HT596} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	47570.0	36254.0	32235.0	12702.0	2539.0	695.0	282.0
SAMPLE 2	49439.5	42609.0	32178.0	13488.0	1131.0	414.0	292.0
SAMPLE 3	51105.5	37292.0	35656.0	12059.0	2256.0	474.0	444.0

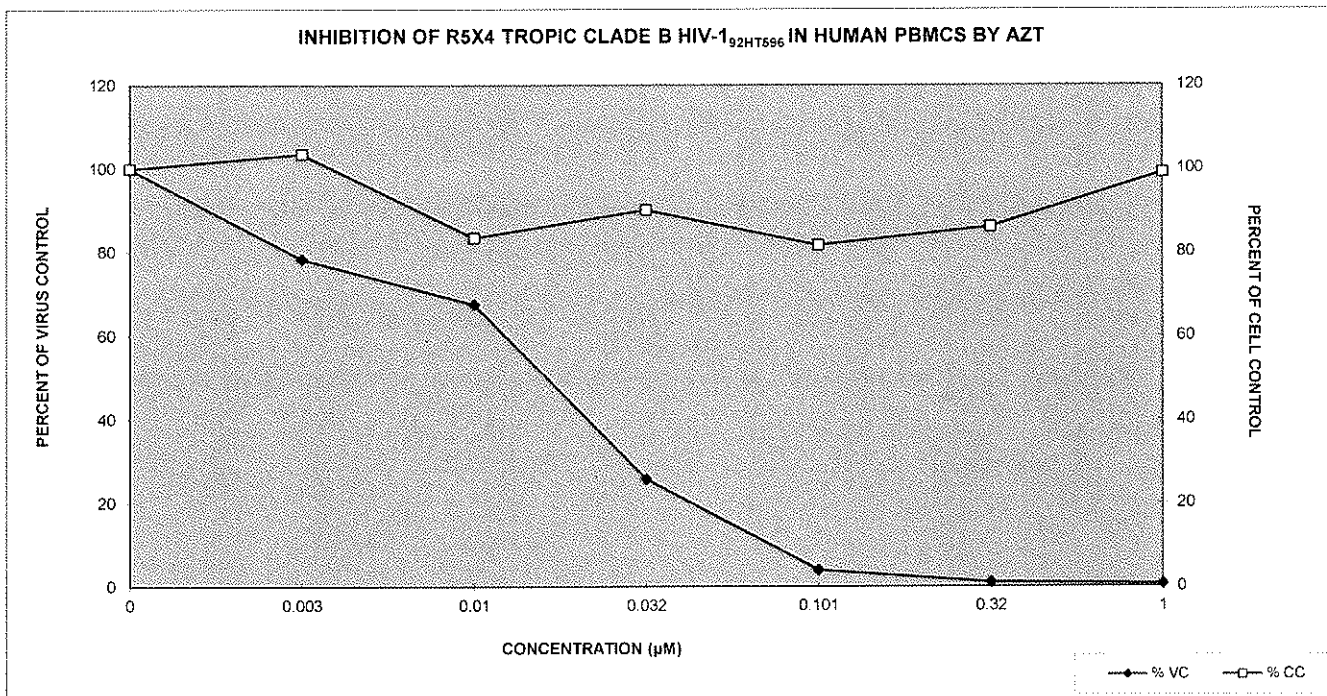
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.6920	2.1698	2.2944	2.0121	1.8983	2.2751
SAMPLE 2	2.3060	2.6313	2.1989	2.3375	2.2415	2.3045	2.9041
SAMPLE 3	2.6320	2.6995	2.1024	2.3538	2.0771	2.4681	2.5008

Virus:	HIV-1	Clade:	B	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	92HT596	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	R5X4	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	0.00438	0.0163	0.0958
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>228.31	>61.35	>10.44

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	49371.7	1768.72584	100.00	2.583	0.256353	100.00
0.003	38718.3	3409.15332	78.42	2.674	0.037399	103.52
0.01	33356.3	1991.77367	67.56	2.156	0.048661	83.48
0.032	12749.7	715.691507	25.82	2.329	0.030691	90.14
0.101	1975.3	744.779386	4.00	2.110	0.118235	81.69
0.32	527.7	147.987612	1.07	2.224	0.293381	86.08
1	339.3	90.7817897	0.69	2.560	0.318651	99.10



INHIBITION OF R5X4 TROPIC CLADE B HIV-1_{92HT596} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	5293.0	7609.0	5352.0	2905.0	80.0	68.0	68.0
SAMPLE 2	5703.5	7158.0	4741.0	3241.0	98.0	54.0	48.0
SAMPLE 3	4987.5	6108.0	4507.0	2064.0	1813.0	54.0	36.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	1.4097	1.8595	1.3560	1.0786	0.9297	0.7951	0.7054
SAMPLE 2	1.2629	1.7507	1.4279	1.1466	0.5874	0.7323	0.6620
SAMPLE 3	1.4450	1.9468	1.5725	1.0373	0.7139	0.5914	0.6599

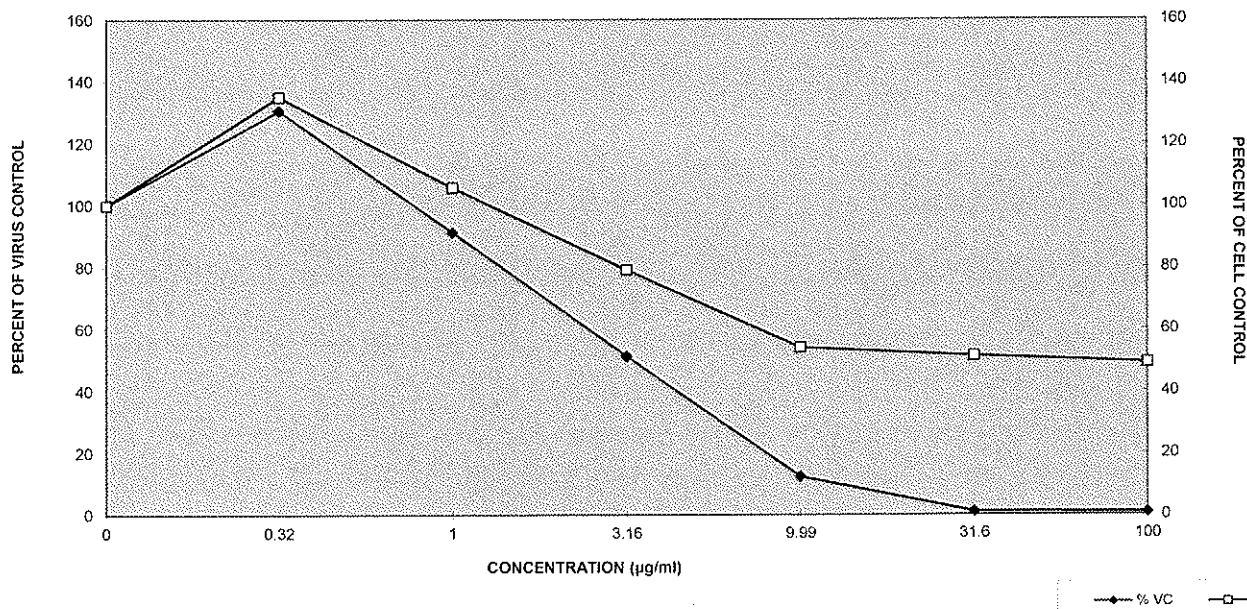
Virus:	HIV-1	Clade:	B	Technician:	Lu Yang	Setup Date:	6/12/13
Strain:	92HT596	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/19/13
Tropism:	R5X4	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	1.60	3.29	21.3
TC (µg/ml)	3.84	67.3	>100
Therapeutic Index (TI)	2.40	20.46	>4.69

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	5328.0	359.28088	100.00	1.373	0.09654347	100.00
0.32	6958.3	770.16254	130.60	1.853	0.09920983	135.01
1	4866.7	436.29157	91.34	1.452	0.1102656	105.80
3.16	2736.7	606.28734	51.36	1.088	0.05519085	79.23
9.99	663.7	995.39255	12.46	0.744	0.17308051	54.18
31.6	58.7	8.0829038	1.10	0.706	0.1043155	51.46
100	50.7	16.165808	0.95	0.676	0.02568469	49.24

INHIBITION OF R5X4 TROPIC CLADE B HIV-1_{92HT596} IN HUMAN PBMCs BY FPA



INHIBITION OF R5X4 TROPIC CLADE B HIV-1_{92HT596} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.032	0.101	0.32	1	3.16	10
SAMPLE 1	5293.0	4866.0	416.0	120.0	122.0	80.0	74.0
SAMPLE 2	5703.5	5230.0	1137.0	140.0	138.0	106.0	96.0
SAMPLE 3	4987.5	4309.0	1457.0	180.0	118.0	86.0	70.0

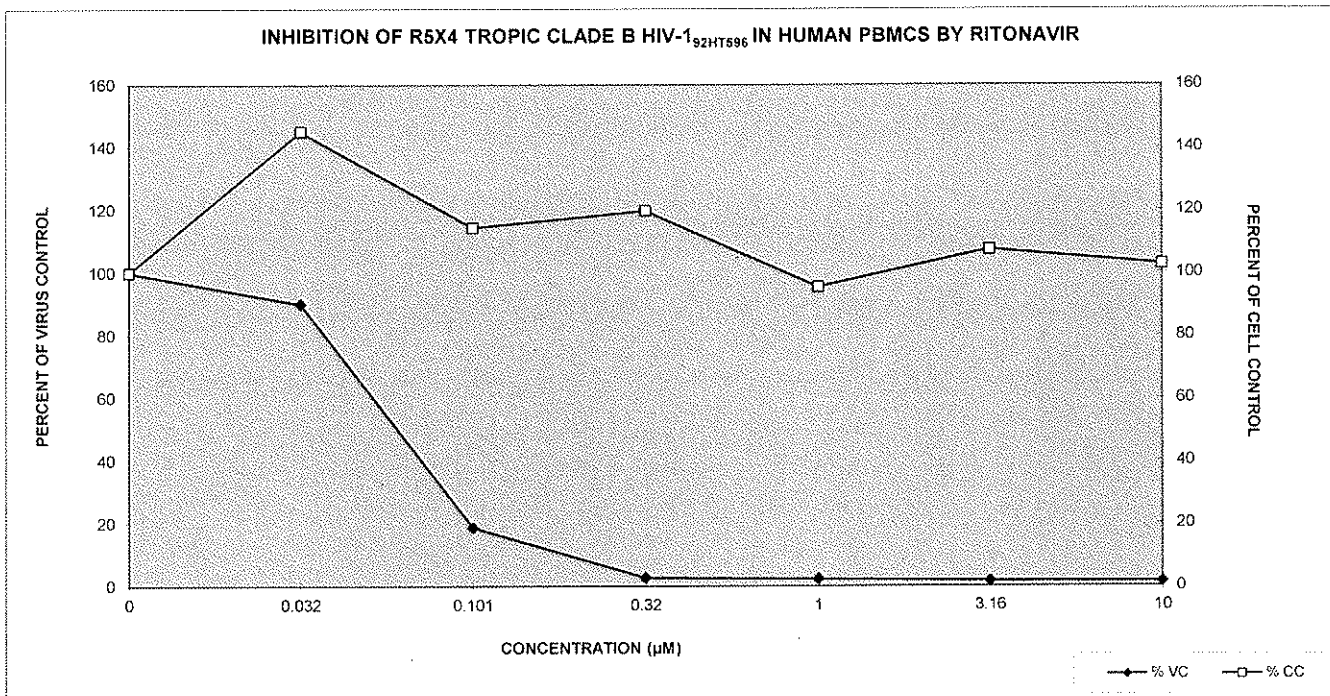
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.032	0.101	0.32	1	3.16	10
SAMPLE 1	1.4097	2.0260	1.6973	1.6461	1.1909	1.3366	1.4170
SAMPLE 2	1.2629	1.9443	1.5429	1.6470	1.3788	1.4272	1.3455
SAMPLE 3	1.4450	1.9996	1.4715	1.6407	1.3640	1.6611	1.4685

Virus:	HIV-1	Clade:	B	Technician:	Lu Yang	Setup Date:	6/12/13
Strain:	92HT596	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/19/13
Tropism:	R5X4	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.0408	0.0611	0.272
TC (µM)	>10.0	>10.0	>10.0
Therapeutic Index (TI)	>245.10	>163.67	>36.76

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	5328.0	359.280879	100.00	1.373	0.096543	100.00
0.032	4801.7	463.858096	90.12	1.990	0.041693	144.99
0.101	1003.3	533.216966	18.83	1.571	0.115414	114.43
0.32	146.7	30.5505046	2.75	1.645	0.003407	119.83
1	126.0	10.5830052	2.36	1.311	0.104474	95.54
3.16	90.7	13.6137186	1.70	1.475	0.16744	107.47
10	80.0	14	1.50	1.410	0.06177	102.76



INHIBITION OF R5X4 TROPIC CLADE B HIV-1_{92HT596} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	5293.0	6028.0	1766.0	1788.0	326.0	72.0	60.0
SAMPLE 2	5703.5	4296.0	2739.0	1031.0	164.0	158.0	52.0
SAMPLE 3	4987.5	5757.0	3655.0	759.0	416.0	212.0	184.0

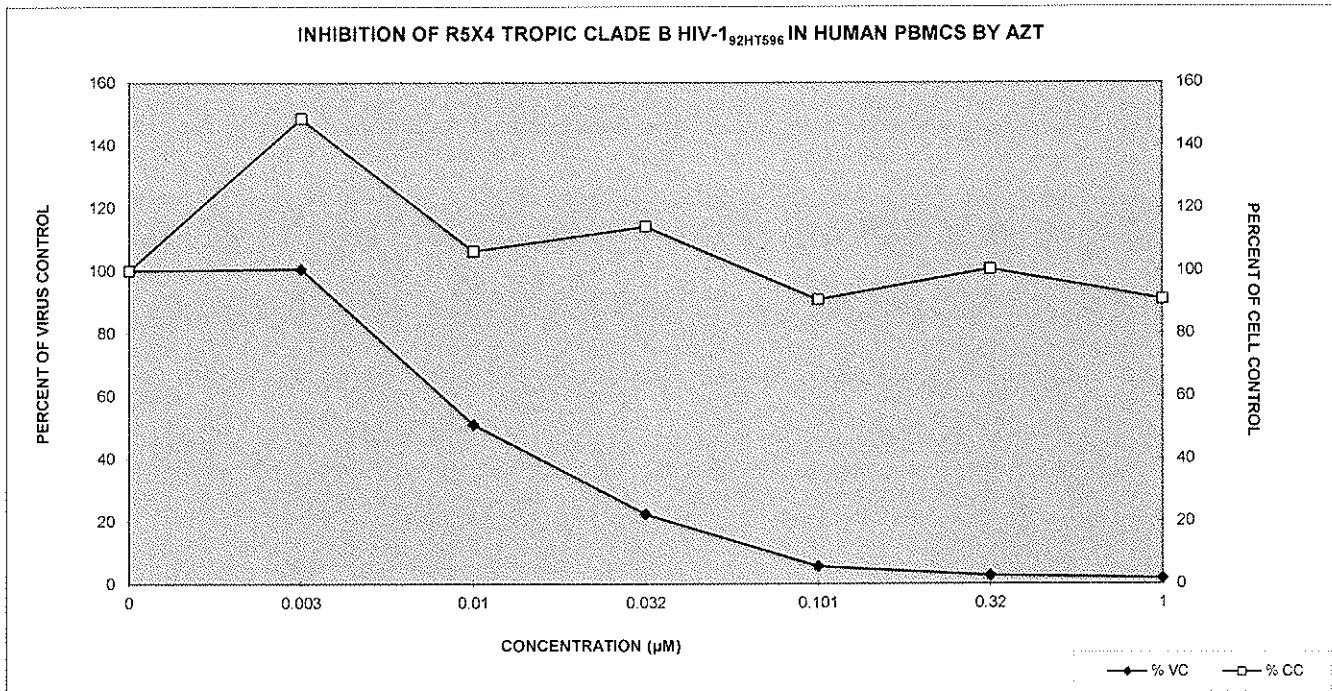
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	1.4097	2.0225	1.4917	1.6022	1.1445	1.3685	0.7054
SAMPLE 2	1.2629	2.1437	1.4541	1.5993	1.3547	1.5067	1.4730
SAMPLE 3	1.4450	1.9495	1.4282	1.4962	1.2369	1.2629	1.5633

Virus:	HIV-1	Clade:	B	Technician:	Lu Yang	Setup Date:	6/12/13
Strain:	92HT596	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/19/13
Tropism:	R5X4	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	0.00559	0.0104	0.132
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>178.89	>96.15	>7.58

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	5328.0	359.280879	100.00	1.373	0.096543	100.00
0.003	5360.3	931.646034	100.61	2.039	0.098092	148.53
0.01	2720.0	944.643319	51.05	1.458	0.031929	106.23
0.032	1192.7	533.209465	22.38	1.566	0.060379	114.09
0.101	302.0	127.70278	5.67	1.245	0.105355	90.74
0.32	147.3	70.606893	2.77	1.379	0.122263	100.50
1	98.7	74.0090085	1.85	1.247	0.471409	90.87



INHIBITION OF CCR5 TROPIC CLADE C HIV-1_{93MW959} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	19131.0	16457.0	11927.0	2352.0	534.0	432.0	442.0
SAMPLE 2	18962.0	22287.0	9408.0	2288.0	540.0	456.0	440.0
SAMPLE 3	20408.5	16503.0	14455.0	3022.0	552.0	520.0	450.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.8117	2.6984	2.1758	1.7804	1.8728	2.0398	2.2751
SAMPLE 2	2.3060	2.5971	1.6791	1.5677	1.4806	1.8393	2.0363
SAMPLE 3	2.6320	2.4576	1.7586	1.9151	1.5730	2.0176	1.6801

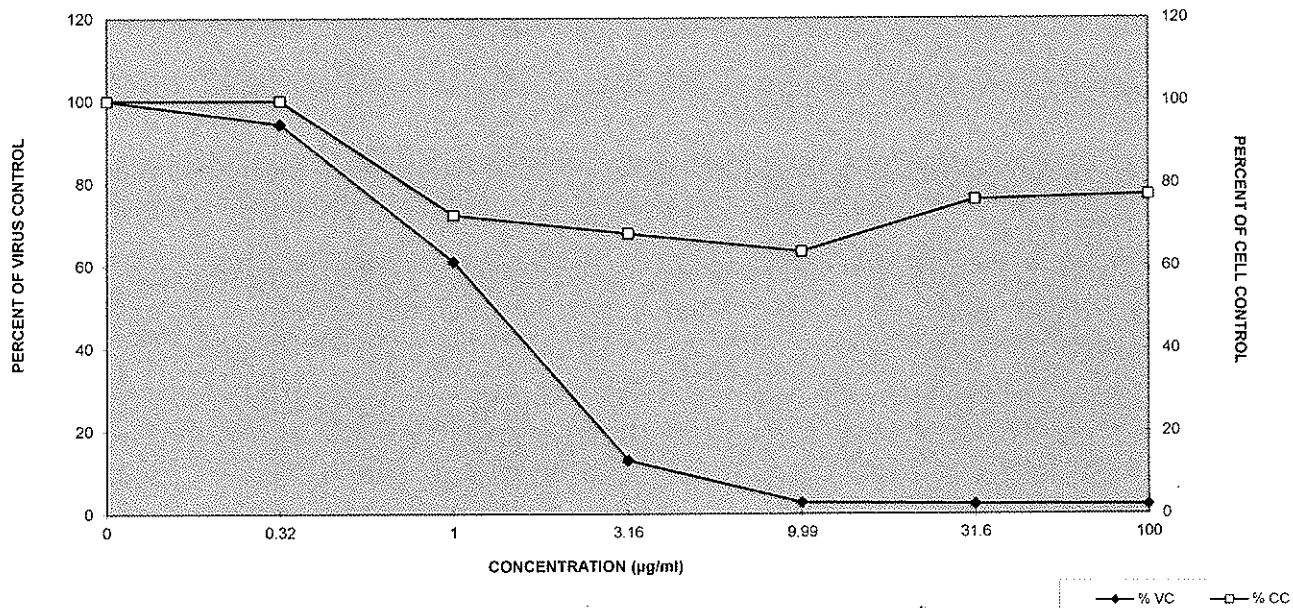
Virus:	HIV-1	Clade:	C	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	93MW959	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	0.623	1.31	7.80
TC (µg/ml)	0.90	>100	>100
Therapeutic Index (TI)	1.44	>76.34	>12.82

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	19500.5	790.87815	100.00	2.583	0.25635281	100.00
0.32	18415.7	3352.7519	94.44	2.584	0.12090394	100.04
1	11930.0	2523.5013	61.18	1.871	0.26679798	72.44
3.16	2554.0	406.56119	13.10	1.754	0.17515333	67.91
9.99	542.0	9.1651514	2.78	1.642	0.20503603	63.57
31.6	469.3	45.489926	2.41	1.966	0.10991207	76.09
100	444.0	5.2915026	2.28	1.997	0.29942414	77.31

INHIBITION OF CCR5 TROPIC CLADE C HIV-1_{93MW959} IN HUMAN PBMCs BY FPA



INHIBITION OF CCR5 TROPIC CLADE C HIV-1_{93MW959} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	19131.0	19518.0	15263.0	10328.0	14011.0	6391.0	5018.0
SAMPLE 2	18962.0	23080.0	12965.0	22780.0	10522.0	12122.0	3973.0
SAMPLE 3	20408.5	25750.0	25782.0	18174.0	27828.0	7365.0	3584.0

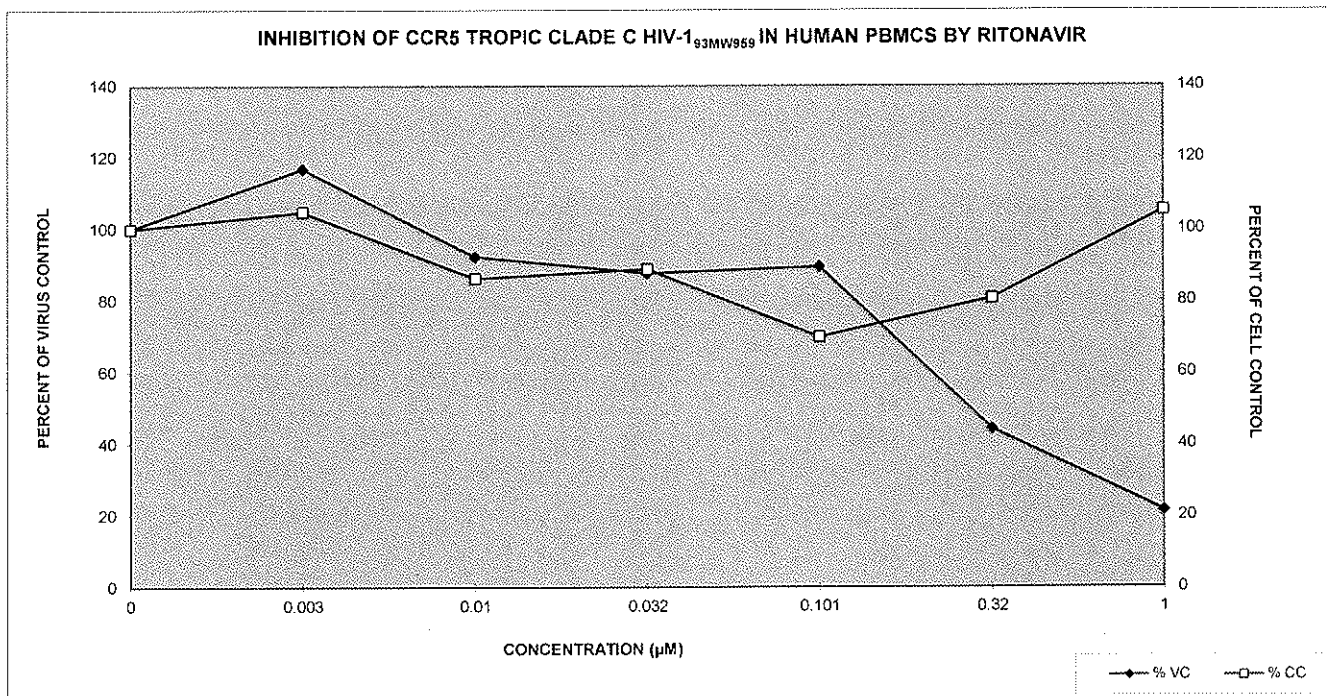
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.7324	2.0992	2.2215	1.7945	2.0948	2.9236
SAMPLE 2	2.3060	2.6502	2.2991	2.5874	2.0357	2.2827	2.6008
SAMPLE 3	2.6320	2.7406	2.2893	2.0741	1.5853	1.8759	2.6306

Virus:	HIV-1	Clade:	C	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	93MW959	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.146	0.276	>1.0
TC (µM)	0.07	>1.0	>1.0
Therapeutic Index (TI)	0.48	>3.62	1

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	19500.5	790.878151	100.00	2.583	0.256353	100.00
0.003	22782.7	3126.62139	116.83	2.708	0.049994	104.82
0.01	18003.3	6833.80877	92.32	2.229	0.11269	86.29
0.032	17094.0	6295.86182	87.66	2.294	0.264287	88.82
0.101	17453.7	9152.2333	89.50	1.805	0.225389	69.88
0.32	8626.0	3066.54219	44.23	2.084	0.203597	80.69
1	4191.7	741.586363	21.50	2.718	0.178389	105.23



INHIBITION OF CCR5 TROPIC CLADE C HIV-1_{93MW959} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	19131.0	14510.0	8088.0	2910.0	1039.0	711.0	681.0
SAMPLE 2	18962.0	17277.0	7258.0	2783.0	977.0	674.0	586.0
SAMPLE 3	20408.5	18499.0	5184.0	2422.0	865.0	646.0	588.0

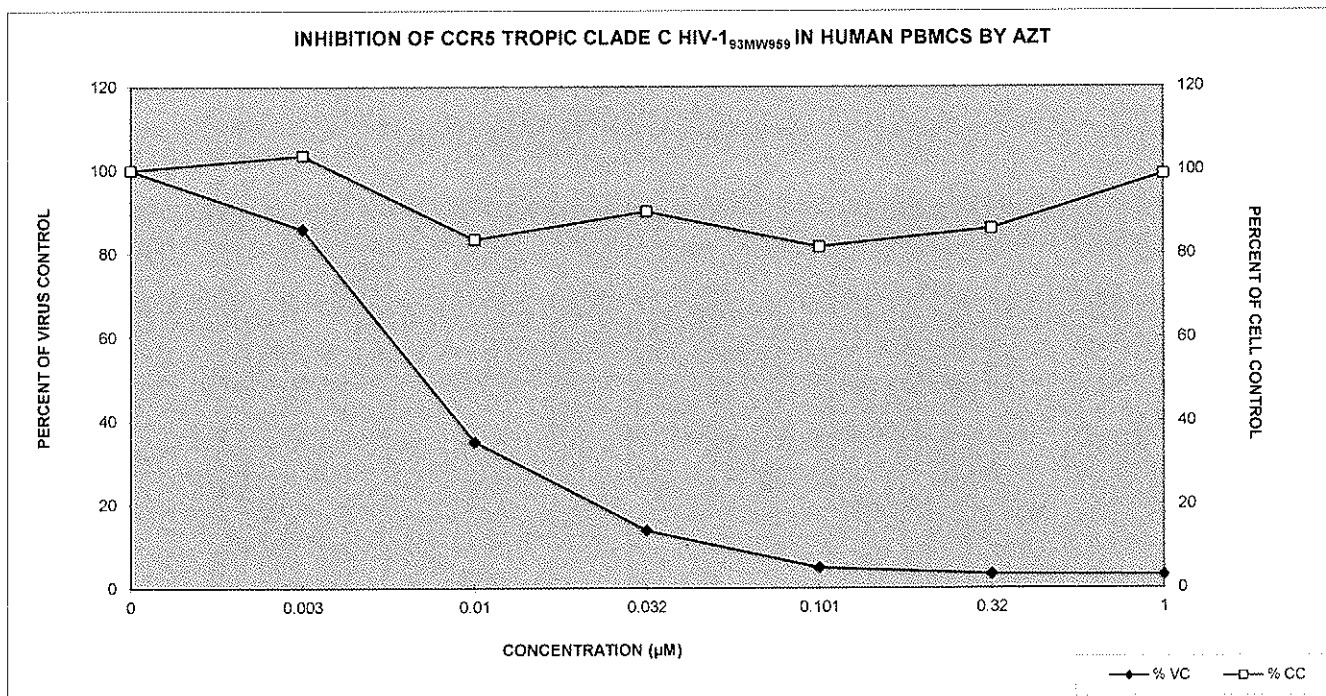
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.6920	2.1698	2.2944	2.0121	1.8983	2.2751
SAMPLE 2	2.3060	2.6313	2.1969	2.3375	2.2415	2.3045	2.9041
SAMPLE 3	2.6320	2.6995	2.1024	2.3538	2.0771	2.4681	2.5008

Virus:	HIV-1	Clade:	C	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	93MW959	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	0.00389	0.00703	0.100
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>257.07	>142.25	>10.00

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	19500.5	790.878151	100.00	2.583	0.256353	100.00
0.003	16762.0	2043.75855	85.96	2.674	0.037399	103.52
0.01	6843.3	1495.74909	35.09	2.156	0.048661	83.48
0.032	2705.0	253.177803	13.87	2.329	0.030691	90.14
0.101	960.3	88.1891906	4.92	2.110	0.118235	81.69
0.32	677.0	32.6036808	3.47	2.224	0.293381	86.08
1	618.3	54.2801376	3.17	2.560	0.318651	99.10



INHIBITION OF CCR5 TROPIC CLADE C HIV-1_{93MW959} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	23362.0	20756.0	16693.0	7546.0	1093.0	724.0	462.0
SAMPLE 2	23149.0	24451.0	18718.0	11496.0	967.0	592.0	432.0
SAMPLE 3	24932.0	22527.0	19781.0	9879.0	540.0	438.0	436.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.2165	2.7399	2.1703	2.5250	2.1383	1.7267	1.7505
SAMPLE 2	1.8423	2.7282	2.0899	2.5461	1.9928	1.7973	1.8690
SAMPLE 3	2.2118	2.7589	2.3185	2.3703	1.9477	1.9701	1.8427

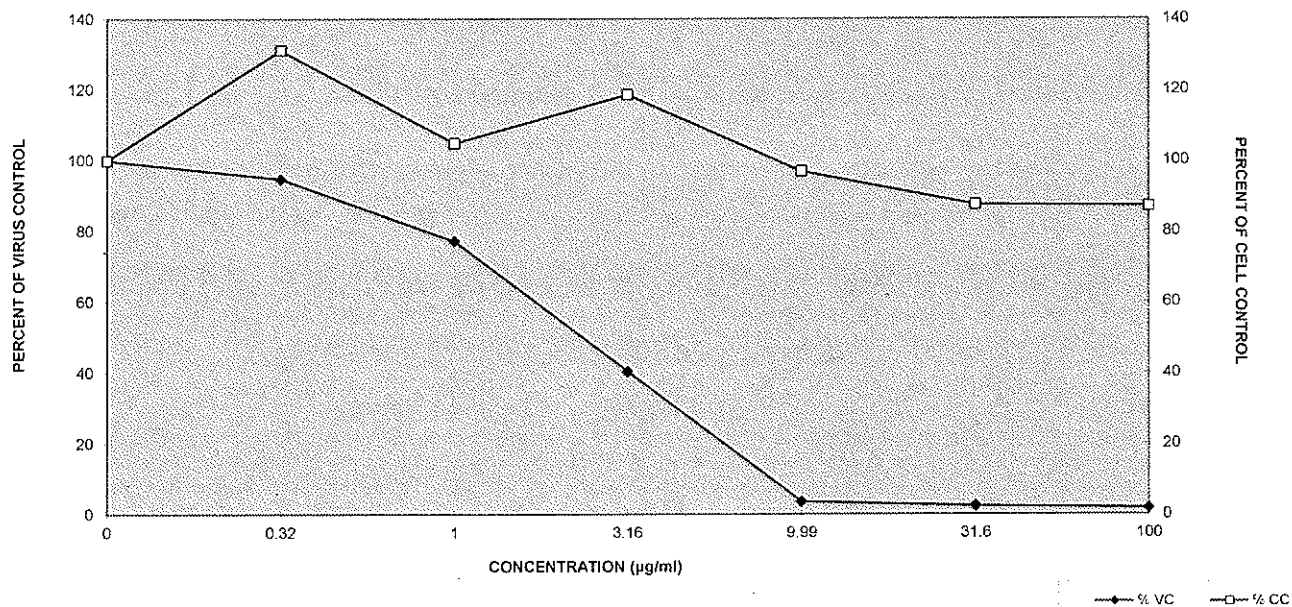
Virus: HIV-1 Clade: C Technician: Lu Yang Setup Date: 6/25/13
 Strain: 93MW959 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 7/2/13
 Tropism: CCR5 Project #: 306-01-01 Client: CJSC

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	1.07	2.35	9.57
TC (µg/ml)	>100	>100	>100
Therapeutic Index (TI)	>93.46	>42.55	>10.45

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	23814.3	973.76914	100.00	2.091	0.21527629	100.00
0.32	22578.0	1848.0279	94.81	2.742	0.01549398	131.16
1	18397.3	1568.7754	77.25	2.193	0.11596361	104.88
3.16	9640.3	1985.7861	40.48	2.480	0.09598866	118.63
9.99	866.7	289.83156	3.64	2.026	0.09960976	96.91
31.6	584.7	143.14096	2.46	1.831	0.12522497	87.59
100	443.3	16.289056	1.86	1.821	0.06222912	87.08

INHIBITION OF CCR5 TROPIC CLADE C HIV-1_{93MW959} IN HUMAN PBMCs BY FPA



INHIBITION OF CCR5 TROPIC CLADE C HIV-1_{93MW959} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	23362.0	19474.0	14048.0	4139.0	764.0	598.0	636.0
SAMPLE 2	23149.0	20109.0	16656.0	5511.0	922.0	576.0	588.0
SAMPLE 3	24932.0	20645.0	16762.0	4466.0	832.0	620.0	574.0

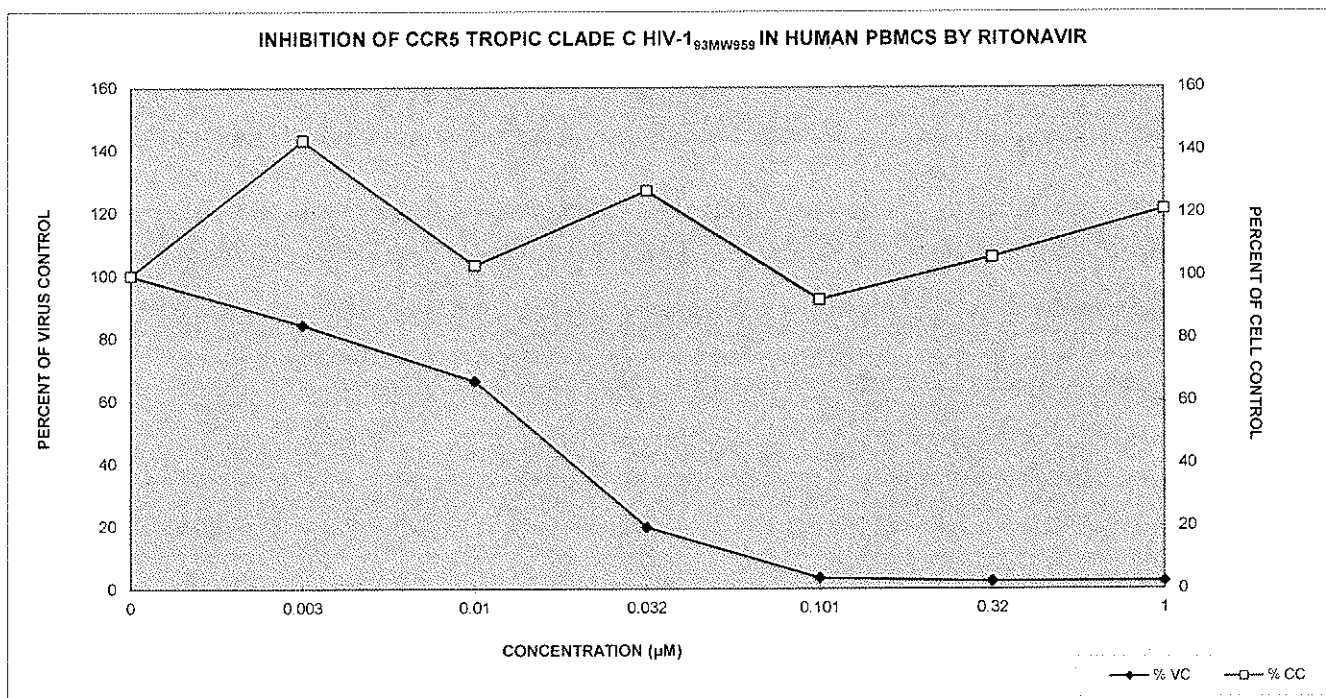
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.2185	3.0065	2.3378	2.8696	1.9534	2.1657	2.6133
SAMPLE 2	1.8423	2.9660	2.0735	2.5955	1.9570	2.3431	2.4286
SAMPLE 3	2.2118	3.0012	2.0663	2.5043	1.8621	2.1305	2.5569

Virus:	HIV-1	Clade:	C	Technician:	Lu Yang	Setup Date:	6/25/13
Strain:	93MW959	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	7/2/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.00562	0.0151	0.0910
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>177.94	>66.23	>10.99

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	23814.3	973.769138	100.00	2.091	0.215276	100.00
0.003	20076.0	586.197066	84.30	2.991	0.022013	143.06
0.01	15822.0	1537.24299	66.44	2.159	0.154714	103.27
0.032	4705.3	716.628449	19.76	2.656	0.190128	127.05
0.101	839.3	79.2548632	3.52	1.931	0.042243	92.35
0.32	598.0	22	2.51	2.213	0.113951	105.85
1	599.3	32.5166624	2.52	2.533	0.094654	121.14



INHIBITION OF CCR5 TROPIC CLADE C HIV-1_{93MW959} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	23362.0	17107.0	10955.0	3901.0	842.0	560.0	536.0
SAMPLE 2	23149.0	15101.0	11645.0	4144.0	1167.0	630.0	474.0
SAMPLE 3	24932.0	15416.0	8027.0	4206.0	1517.0	712.0	438.0

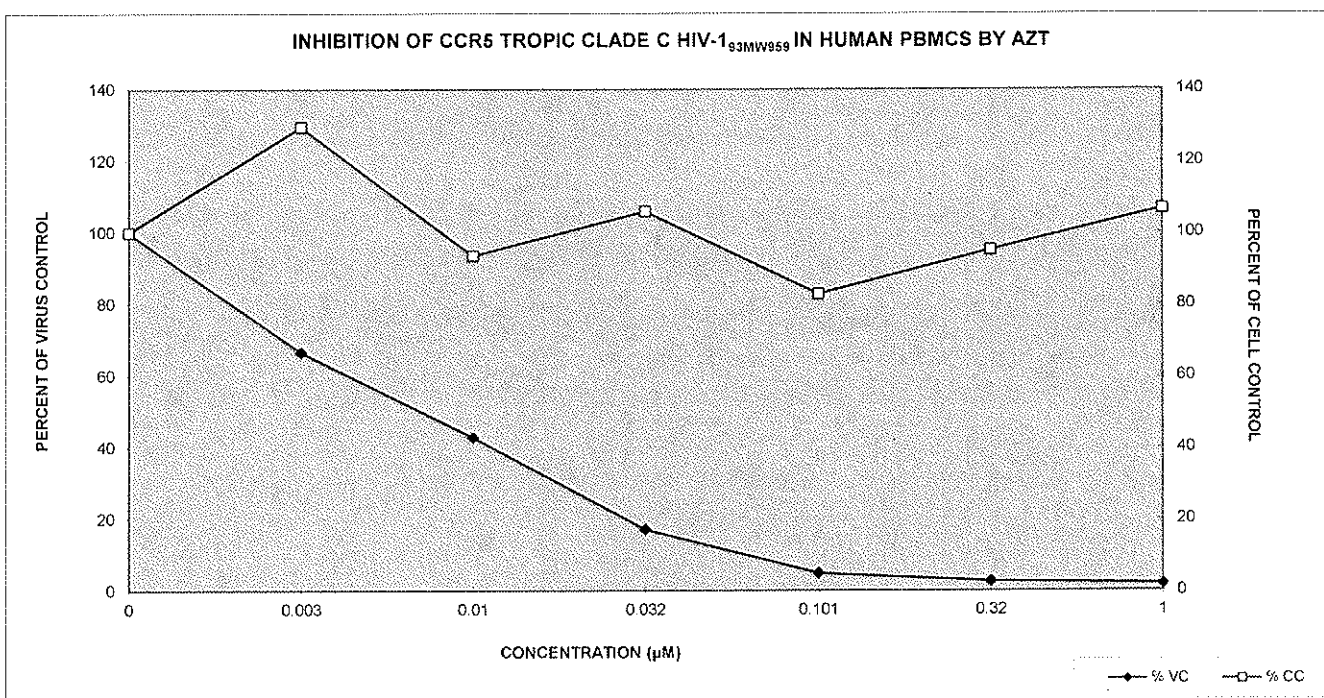
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.2185	2.8971	2.0651	2.3076	1.7804	2.0949	1.7505
SAMPLE 2	1.8423	2.6652	2.0317	2.0823	1.7156	2.0949	2.6160
SAMPLE 3	2.2118	2.5591	1.7708	2.2511	1.7004	1.7756	2.3241

Virus:	HIV-1	Clade:	C	Technician:	Lu Yang	Setup Date:	6/25/13
Strain:	93MW959	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	7/2/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	<0.00300	0.00697	0.100
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>333.33	>143.47	>10.00

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	23814.3	973.769138	100.00	2.091	0.215276	100.00
0.003	15874.7	1078.79114	66.66	2.707	0.172858	129.47
0.01	10209.0	1920.90291	42.87	1.956	0.16114	93.54
0.032	4083.7	161.202771	17.15	2.214	0.117222	105.87
0.101	1175.3	337.577152	4.94	1.732	0.042485	82.84
0.32	634.0	76.0789064	2.66	1.988	0.184348	95.10
1	482.7	49.5714972	2.03	2.230	0.440342	106.66



INHIBITION OF CCR5 TROPIC CLADE D HIV-1_{92UG035} IN HUMAN PBMCS BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	8307.0	7830.0	7937.0	2404.0	130.0	154.0	134.0
SAMPLE 2	7904.0	7115.0	3907.0	1727.0	158.0	144.0	96.0
SAMPLE 3	6807.5	7722.0	5633.0	1717.0	162.0	148.0	210.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.8117	2.6984	2.1758	1.7804	1.8728	2.0398	2.2751
SAMPLE 2	2.3060	2.5971	1.6791	1.5677	1.4806	1.8393	2.0363
SAMPLE 3	2.6320	2.4576	1.7586	1.9151	1.5730	2.0176	1.6801

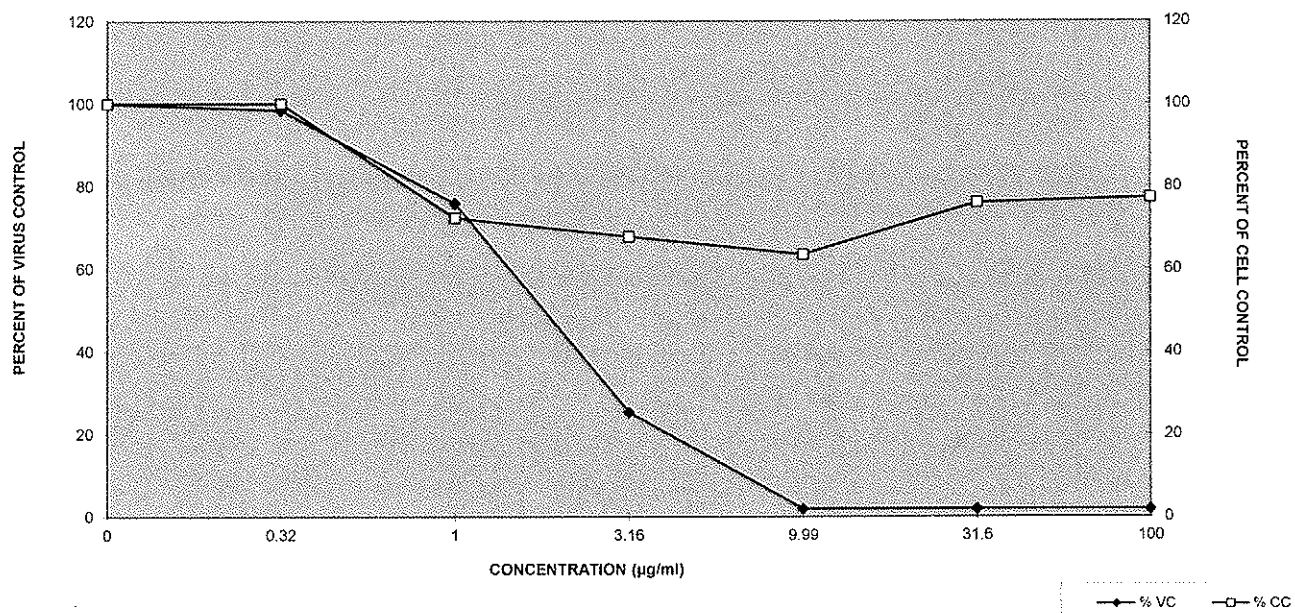
Virus:	HIV-1	Clade:	D	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	92UG035	Cells:	HUMAN PBMCS	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	1.02	1.80	8.60
TC (µg/ml)	0.90	>100	>100
Therapeutic Index (TI)	0.88	>55.56	>11.63

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	7672.8	776.01777	100.00	2.583	0.25635281	100.00
0.32	7555.7	385.43006	98.47	2.584	0.12090394	100.04
1	5825.7	2021.8965	75.93	1.871	0.26679798	72.44
3.16	1949.3	393.78463	25.41	1.754	0.17515333	67.91
9.99	150.0	17.435596	1.95	1.642	0.20503603	63.57
31.6	148.7	5.033223	1.94	1.966	0.10991207	76.09
100	146.7	58.045959	1.91	1.997	0.29942414	77.31

INHIBITION OF CCR5 TROPIC CLADE D HIV-1_{92UG035} IN HUMAN PBMCS BY FPA



INHIBITION OF CCR5 TROPIC CLADE D HIV-1_{92UG035} IN HUMAN PBMCS BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	8307.0	7573.0	5740.0	5918.0	4660.0	5527.0	3234.0
SAMPLE 2	7904.0	6501.0	5986.0	7621.0	6667.0	5848.0	3360.0
SAMPLE 3	6807.5	8614.0	5888.0	5718.0	7903.0	9916.0	4055.0

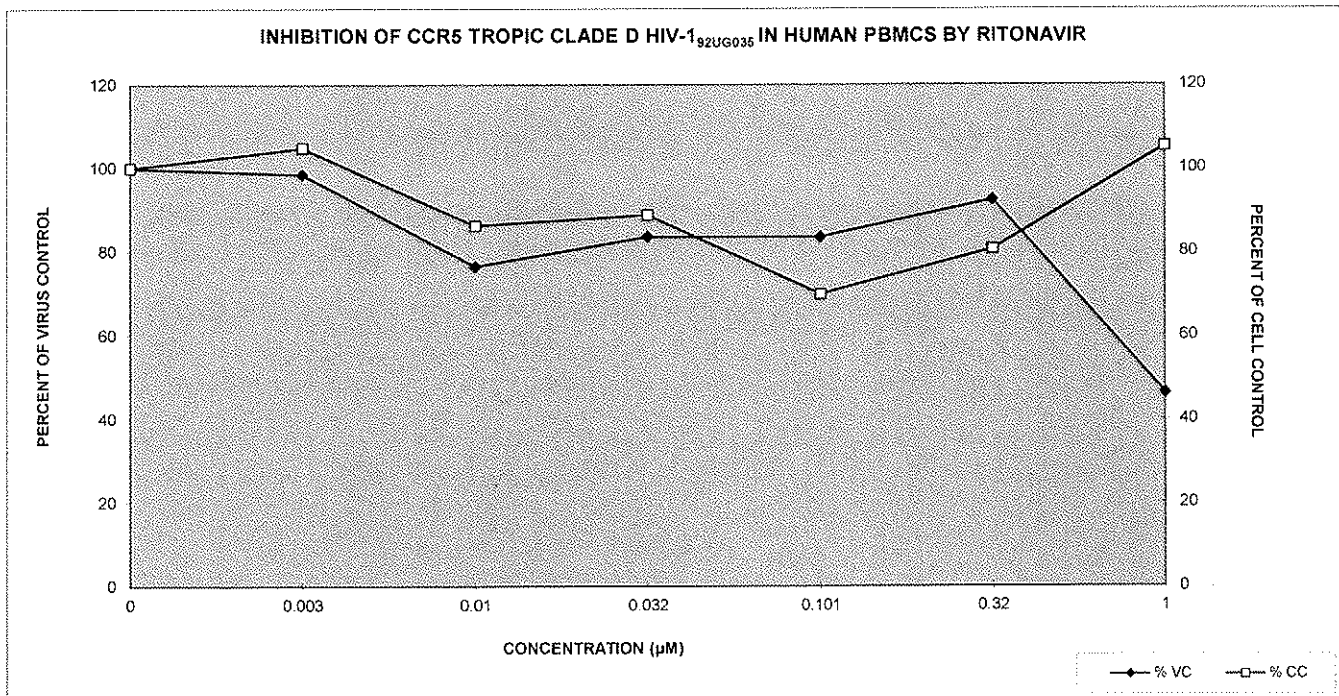
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.7324	2.0992	2.2215	1.7945	2.0948	2.9236
SAMPLE 2	2.3060	2.6502	2.2991	2.5874	2.0357	2.2827	2.6008
SAMPLE 3	2.6320	2.7406	2.2893	2.0741	1.5853	1.8759	2.6306

Virus:	HIV-1	Clade:	D	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	92UG035	Cells:	HUMAN PBMCS	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CISC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.493	0.912	>1.0
TC (µM)	0.07	>1.0	>1.0
Therapeutic Index (TI)	0.14	>1.10	1

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	7672.8	776.017773	100.00	2.583	0.256353	100.00
0.003	7562.7	1056.5379	98.56	2.708	0.049994	104.82
0.01	5871.3	123.843988	76.52	2.229	0.11269	86.29
0.032	6419.0	1045.75475	83.66	2.294	0.264287	88.82
0.101	6410.0	1636.7037	83.54	1.805	0.225389	69.88
0.32	7097.0	2446.5958	92.50	2.084	0.203597	80.69
1	3549.7	442.142888	46.26	2.718	0.178389	105.23



INHIBITION OF CCR5 TROPIC CLADE D HIV-1_{92UG035} IN HUMAN PBMCs

BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	8307.0	5968.0	829.0	262.0	162.0	142.0	132.0
SAMPLE 2	7904.0	5969.0	1561.0	228.0	166.0	110.0	154.0
SAMPLE 3	6607.5	3473.0	953.0	248.0	134.0	118.0	134.0

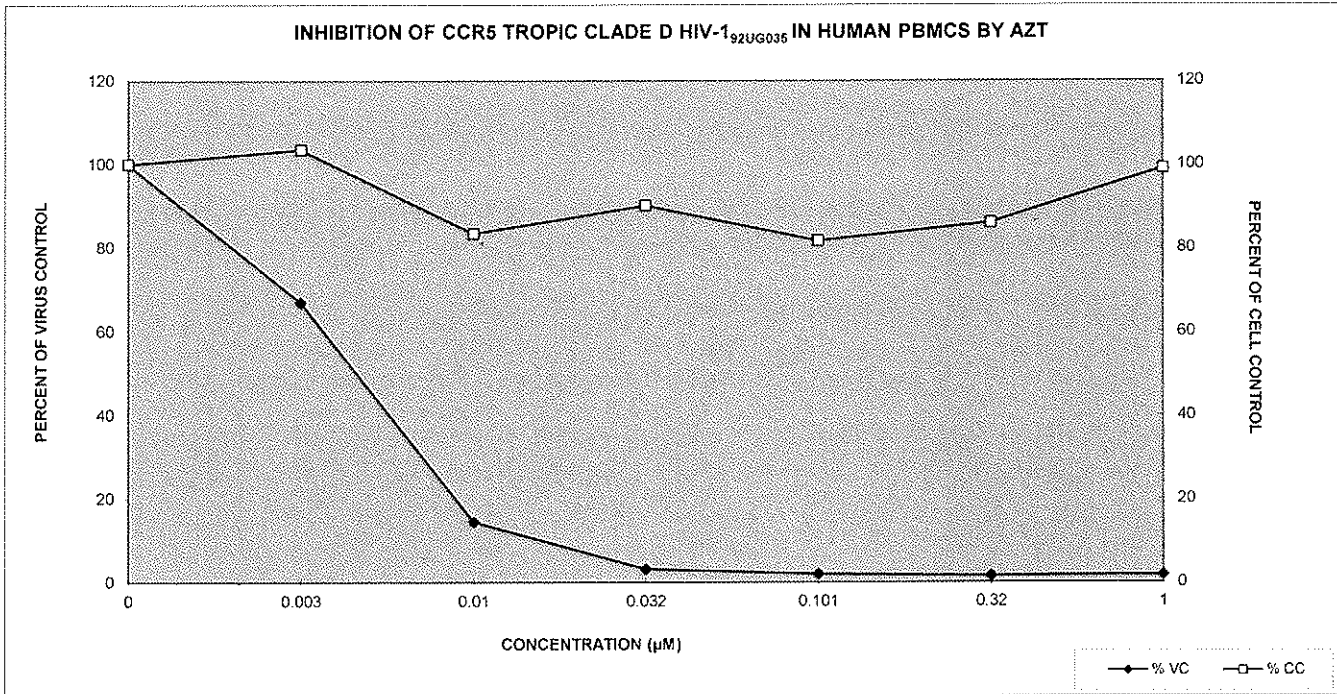
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.6920	2.1698	2.2944	2.0121	1.8983	2.2751
SAMPLE 2	2.3060	2.6313	2.1969	2.3375	2.2415	2.3045	2.9041
SAMPLE 3	2.6320	2.6995	2.1024	2.3538	2.0771	2.4681	2.5008

Virus: HIV-1 Clade: D Technician: Lu Yang Setup Date: 5/28/13
 Strain: 92UG035 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/4/13
 Tropism: CCR5 Project #: 306-01-01 Client: CISC

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	<0.00300	0.00443	0.0266
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>333.33	>225.73	>37.59

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	7672.8	776.017773	100.00	2.583	0.256353	100.00
0.003	5136.7	1440.77768	66.95	2.674	0.037399	103.52
0.01	1114.3	391.761832	14.52	2.156	0.048661	83.48
0.032	246.0	17.0880075	3.21	2.329	0.030691	90.14
0.101	154.0	17.4355958	2.01	2.110	0.118235	81.69
0.32	123.3	16.653328	1.61	2.224	0.293381	86.08
1	140.0	12.1655251	1.82	2.560	0.318651	99.10



INHIBITION OF CCR5 TROPIC CLADE D HIV-1_{92UG035} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	8440.0	9245.0	5121.0	2596.0	344.0	340.0	264.0
SAMPLE 2	7825.5	8730.0	7773.0	4165.0	454.0	322.0	220.0
SAMPLE 3	8730.5	6923.0	7961.0	3765.0	548.0	388.0	320.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.2185	2.7399	2.1703	2.5250	2.1383	1.7267	1.7505
SAMPLE 2	1.8423	2.7282	2.0899	2.5461	1.9928	1.7973	1.8690
SAMPLE 3	2.2118	2.7569	2.3185	2.3703	1.9477	1.9701	1.8427

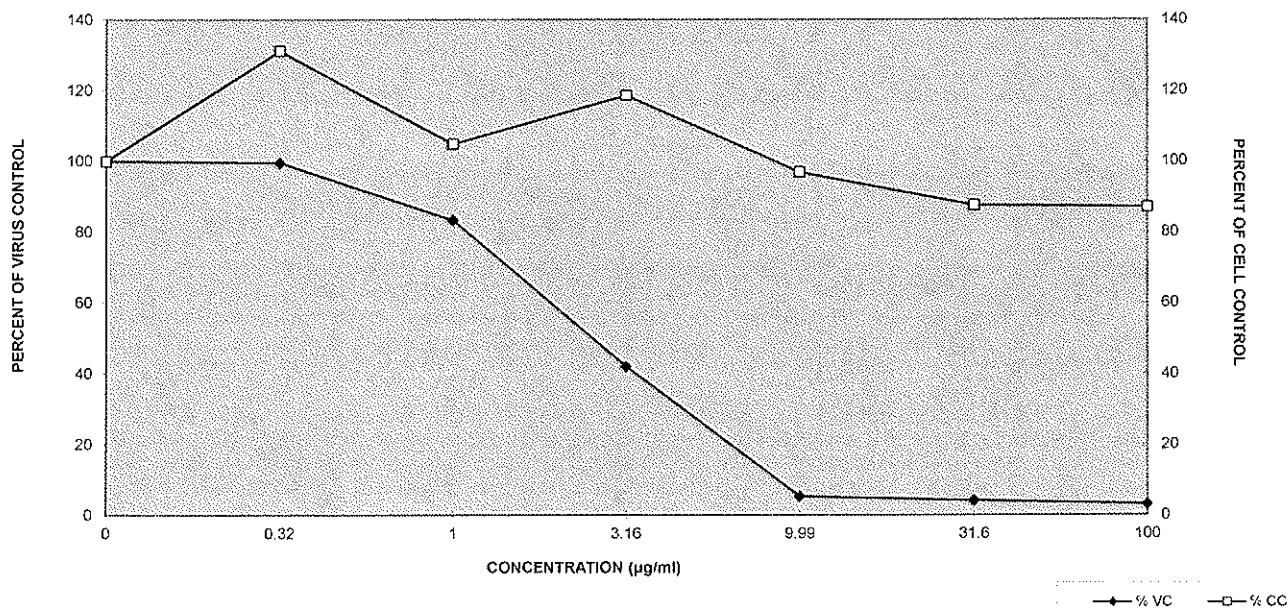
Virus:	HIV-1	Clade:	D	Technician:	Lu Yang	Setup Date:	6/25/13
Strain:	92UG035	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	7/2/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CISC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	1.26	2.54	14.5
TC (µg/ml)	>100	>100	>100
Therapeutic Index (TI)	>79.37	>39.37	>6.90

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	8332.0	462.0652	100.00	2.091	0.21527629	100.00
0.32	8299.3	1219.4369	99.61	2.742	0.01549398	131.16
1	6951.7	1588.1881	83.43	2.193	0.11596361	104.88
3.16	3508.7	815.30383	42.11	2.480	0.09598866	118.63
9.99	448.7	102.10452	5.38	2.026	0.09960976	96.91
31.6	350.0	34.117444	4.20	1.831	0.12522497	87.59
100	268.0	50.119856	3.22	1.821	0.06222912	87.08

INHIBITION OF CCR5 TROPIC CLADE D HIV-1_{92UG035} IN HUMAN PBMCs BY FPA



INHIBITION OF CCR5 TROPIC CLADE D HIV-1_{92UG035} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	8440.0	9499.0	7856.0	2698.0	464.0	356.0	360.0
SAMPLE 2	7825.5	8820.0	6296.0	1821.0	352.0	268.0	274.0
SAMPLE 3	8730.5	6905.0	5194.0	1871.0	390.0	284.0	266.0

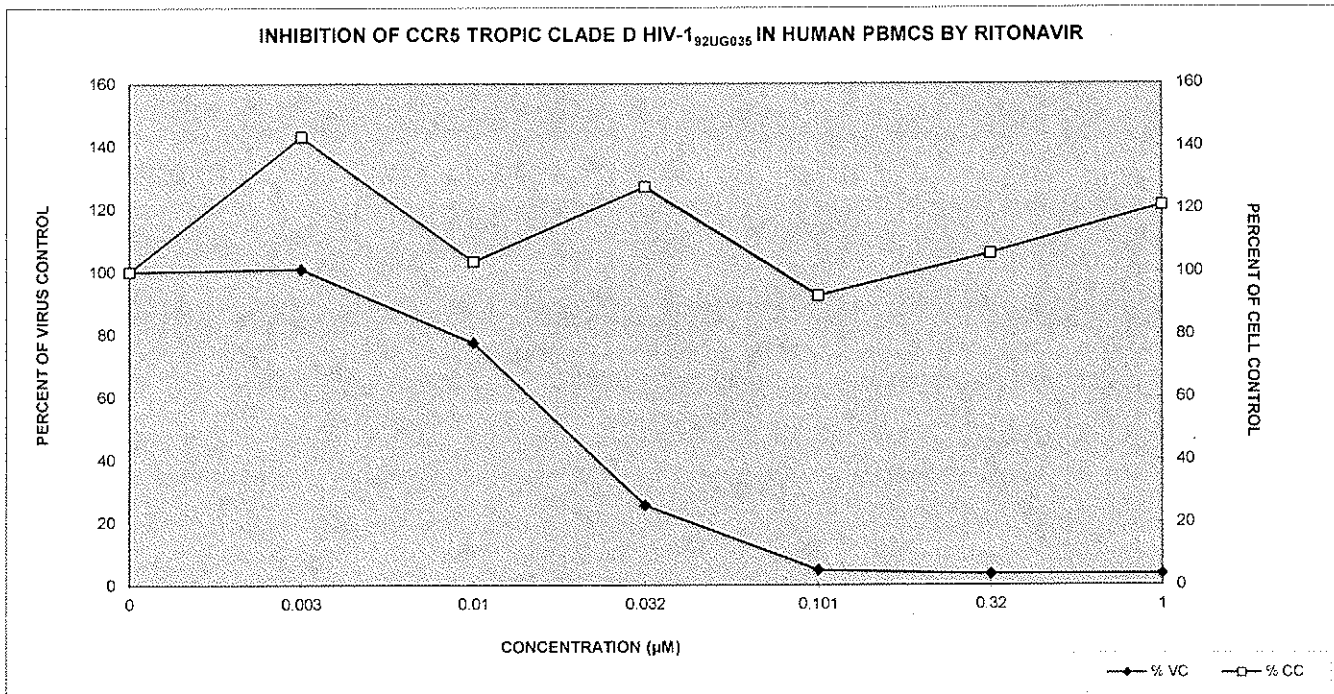
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.2185	3.0065	2.3378	2.8696	1.9534	2.1657	2.6133
SAMPLE 2	1.8423	2.9660	2.0735	2.5955	1.9570	2.3431	2.4286
SAMPLE 3	2.2118	3.0012	2.0663	2.5043	1.8821	2.1305	2.5569

Virus:	HIV-1	Clade:	D	Technician:	Lu Yang	Setup Date:	6/25/13
Strain:	92UG035	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	7/2/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.0106	0.0185	0.100
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>94.34	>54.05	>10.00

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	8332.0	462.065201	100.00	2.091	0.215276	100.00
0.003	8408.0	1345.18289	100.91	2.991	0.022013	143.06
0.01	6448.7	1337.5505	77.40	2.159	0.154714	103.27
0.032	2130.0	492.537308	25.56	2.656	0.190128	127.05
0.101	402.0	56.9561235	4.82	1.931	0.042243	92.35
0.32	302.7	46.8757222	3.63	2.213	0.113951	105.85
1	300.0	52.1152569	3.60	2.533	0.094654	121.14



INHIBITION OF CCR5 TROPIC CLADE D HIV-1_{92UG035} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	8440.0	4329.0	1463.0	208.0	182.0	190.0	260.0
SAMPLE 2	7825.5	5331.0	1745.0	424.0	194.0	228.0	266.0
SAMPLE 3	8730.5	4029.0	1317.0	466.0	266.0	302.0	298.0

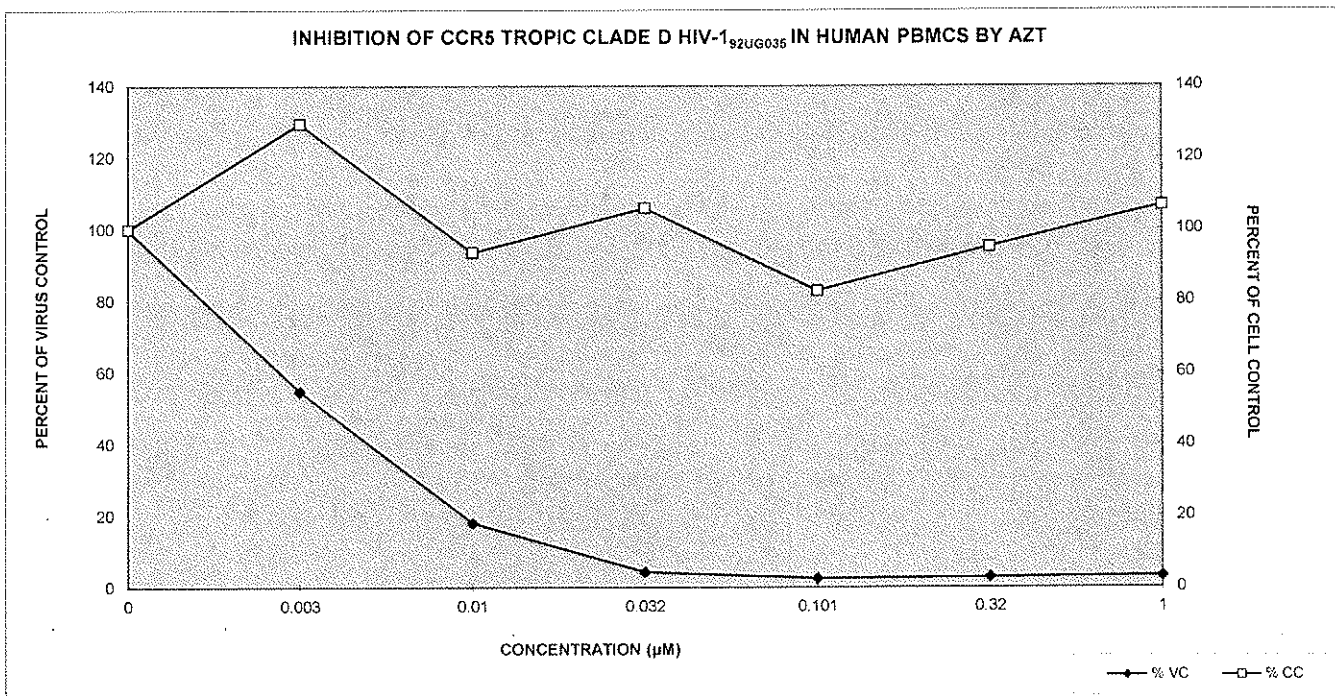
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.2185	2.8971	2.0651	2.3076	1.7804	2.0949	1.7505
SAMPLE 2	1.8423	2.6652	2.0317	2.0823	1.7156	2.0949	2.6160
SAMPLE 3	2.2118	2.5591	1.7708	2.2511	1.7004	1.7756	2.3241

Virus:	HIV-1	Clade:	D	Technician:	Lu Yang	Setup Date:	6/25/13
Strain:	92UG035	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	7/2/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	<0.00300	0.00351	0.0304
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>333.33	>284.90	>32.89

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	8332.0	462.065201	100.00	2.091	0.215276	100.00
0.003	4563.0	681.812291	54.76	2.707	0.172858	129.47
0.01	1508.3	217.571444	18.10	1.956	0.16114	93.54
0.032	366.0	138.4341	4.39	2.214	0.117222	105.87
0.101	214.0	45.4312668	2.57	1.732	0.042485	82.84
0.32	240.0	56.9561235	2.88	1.988	0.184348	95.10
1	274.7	20.4287379	3.30	2.230	0.440342	106.66



INHIBITION OF CXCR4 TROPIC CLADE E HIV-1_{CMU02} IN HUMAN PBMCS BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	20670.0	23025.0	17227.0	11606.0	4262.0	100.0	116.0
SAMPLE 2	21282.0	23144.0	19248.0	10610.0	3877.0	118.0	98.0
SAMPLE 3	21017.5	19602.0	15757.0	10215.0	5542.0	168.0	138.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.8117	2.6984	2.1758	1.7804	1.8728	2.0398	2.2751
SAMPLE 2	2.3060	2.5971	1.6791	1.5677	1.4806	1.8393	2.0363
SAMPLE 3	2.6320	2.4576	1.7586	1.9151	1.5730	2.0176	1.6801

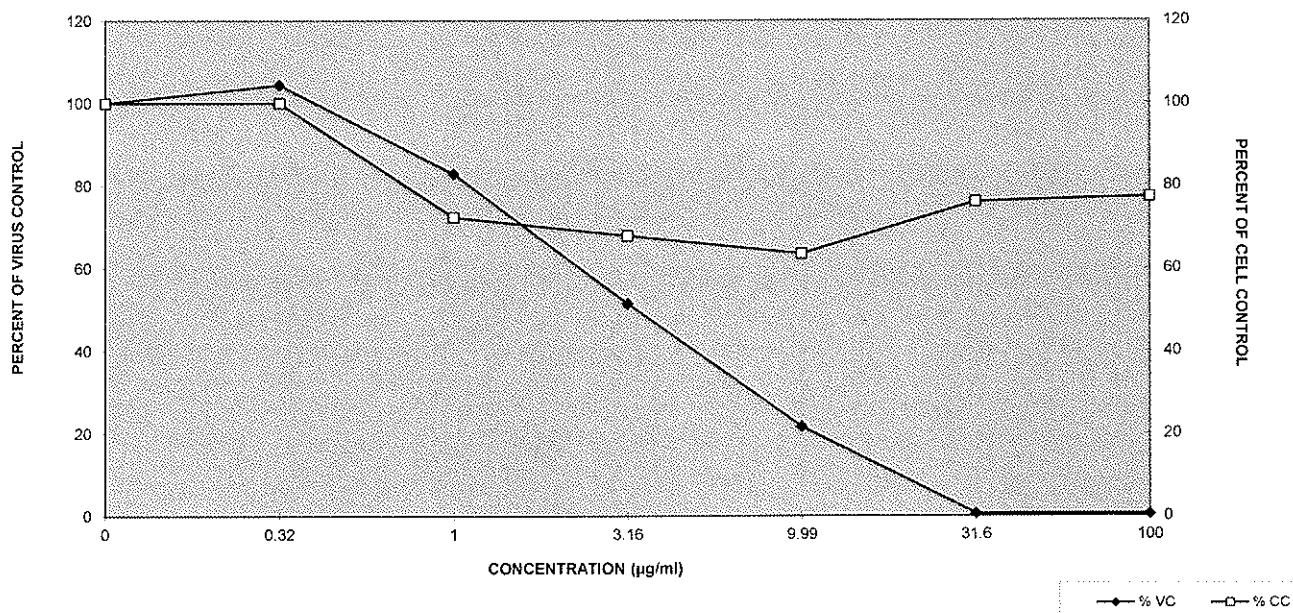
Virus:	HIV-1	Clade:	E	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	CMU02	Cells:	HUMAN PBMCS	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CXCR4	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	1.34	3.35	24.9
TC (µg/ml)	0.90	>100	>100
Therapeutic Index (TI)	0.67	>29.85	>4.02

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	20989.8	306.93661	100.00	2.583	0.25635281	100.00
0.32	21923.7	2011.5025	104.45	2.584	0.12090394	100.04
1	17410.7	1752.7322	82.95	1.871	0.26679798	72.44
3.16	10810.3	716.81262	51.50	1.754	0.17515333	67.91
9.99	4560.3	871.66985	21.73	1.642	0.20503603	63.57
31.6	128.7	35.232561	0.61	1.966	0.10991207	76.09
100	117.3	20.033306	0.56	1.997	0.29942414	77.31

INHIBITION OF CXCR4 TROPIC CLADE E HIV-1_{CMU02} IN HUMAN PBMCS BY FPA



INHIBITION OF CXCR4 TROPIC CLADE E HIV-1_{CMU02} IN HUMAN PBMCS BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	20670.0	20461.0	17804.0	17912.0	17126.0	19238.0	18001.0
SAMPLE 2	21282.0	20429.0	19815.0	16448.0	18576.0	19981.0	20019.0
SAMPLE 3	21017.5	22670.0	20427.0	17134.0	18048.0	19802.0	15820.0

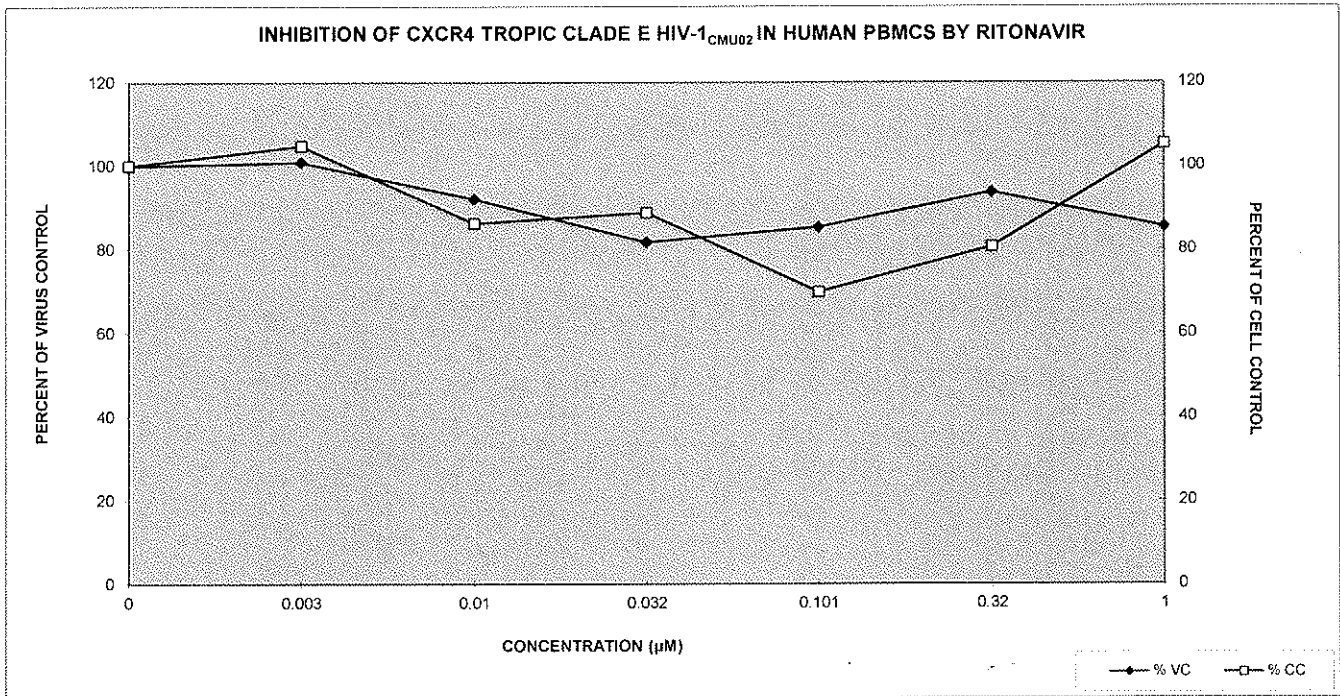
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.7324	2.0992	2.2215	1.7945	2.0948	2.9236
SAMPLE 2	2.3060	2.6502	2.2991	2.5874	2.0357	2.2827	2.6008
SAMPLE 3	2.6320	2.7406	2.2893	2.0741	1.5853	1.8759	2.6306

Virus:	HIV-1	Clade:	E	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	CMU02	Cells:	HUMAN PBMCS	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CXCR4	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	>1.0	>1.0	>1.0
TC (µM)	0.07	>1.0	>1.0
Therapeutic Index (TI)			

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	20989.8	306.936611	100.00	2.583	0.256353	100.00
0.003	21186.7	1284.70399	100.94	2.708	0.049994	104.82
0.01	19348.7	1372.27269	92.18	2.229	0.11269	86.29
0.032	17164.7	732.481627	81.78	2.294	0.264287	88.82
0.101	17916.7	733.867381	85.36	1.805	0.225389	69.88
0.32	19673.7	387.768402	93.73	2.084	0.203597	80.69
1	17946.7	2100.02722	85.50	2.718	0.178389	105.23



INHIBITION OF CXCR4 TROPIC CLADE E HIV-1_{CMU02} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	20670.0	19860.0	9284.0	616.0	460.0	178.0	162.0
SAMPLE 2	21282.0	22673.0	6863.0	2006.0	388.0	130.0	124.0
SAMPLE 3	21017.5	19242.0	6484.0	1239.0	236.0	152.0	150.0

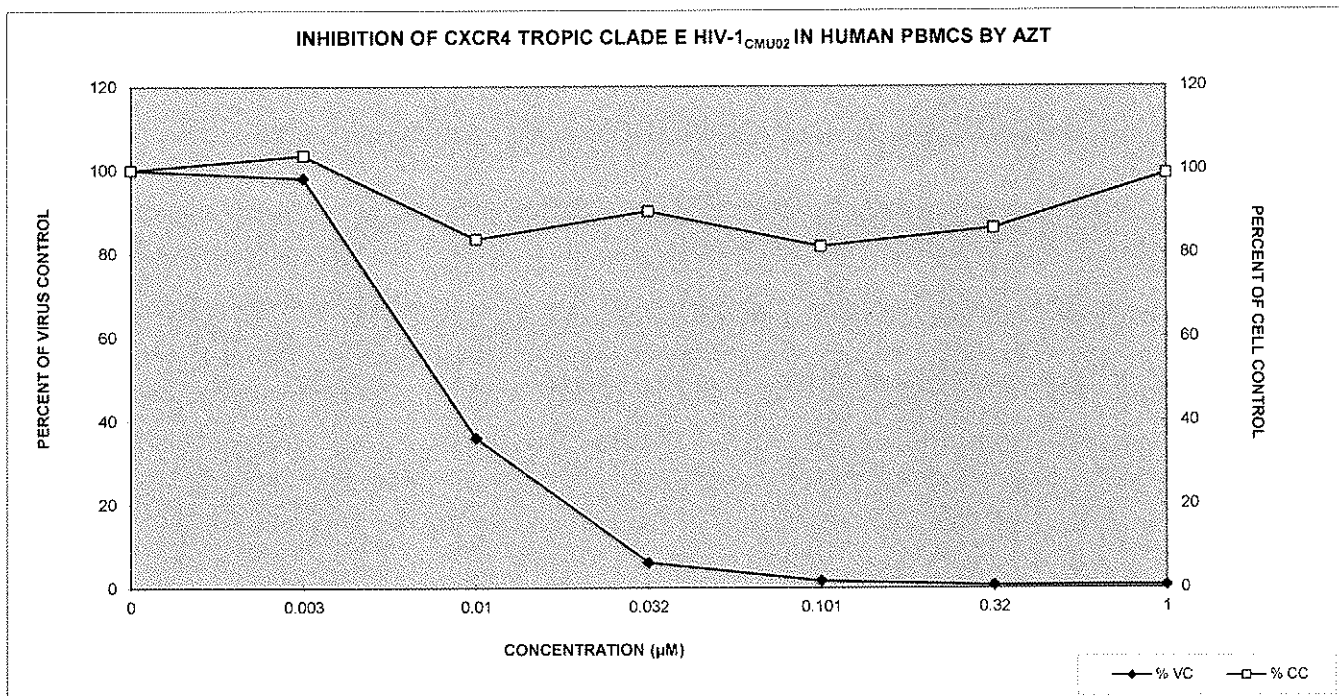
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.6920	2.1898	2.2944	2.0121	1.8983	2.2751
SAMPLE 2	2.3060	2.6313	2.1969	2.3375	2.2415	2.3045	2.9041
SAMPLE 3	2.6320	2.6995	2.1024	2.3538	2.0771	2.4681	2.5008

Virus:	HIV-1	Clade:	E	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	CMU02	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CXCR4	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	0.00469	0.00762	0.0430
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>213.22	>131.23	>23.26

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	20989.8	306.936611	100.00	2.583	0.256353	100.00
0.003	20591.7	1828.78165	98.10	2.674	0.037399	103.52
0.01	7543.7	1519.03928	35.94	2.156	0.048661	83.48
0.032	1287.0	696.242056	6.13	2.329	0.030691	90.14
0.101	361.3	114.356169	1.72	2.110	0.118235	81.69
0.32	153.3	24.0277617	0.73	2.224	0.293381	86.08
1	145.3	19.4250697	0.69	2.560	0.318651	99.10



INHIBITION OF CXCR4 TROPIC CLADE E HIV-1_{CMU02} IN HUMAN PBMCS BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	1073.0	2440.0	1919.0	652.0	16.0	18.0	6.0
SAMPLE 2	2381.0	2276.0	1133.0	406.0	12.0	16.0	4.0
SAMPLE 3	1513.5	1992.0	1281.0	496.0	24.0	12.0	2.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	1.4097	1.8595	1.3560	1.0786	0.9297	0.7951	0.7054
SAMPLE 2	1.2629	1.7507	1.4279	1.1466	0.5874	0.7323	0.6620
SAMPLE 3	1.4450	1.9488	1.5725	1.0373	0.7139	0.5914	0.6599

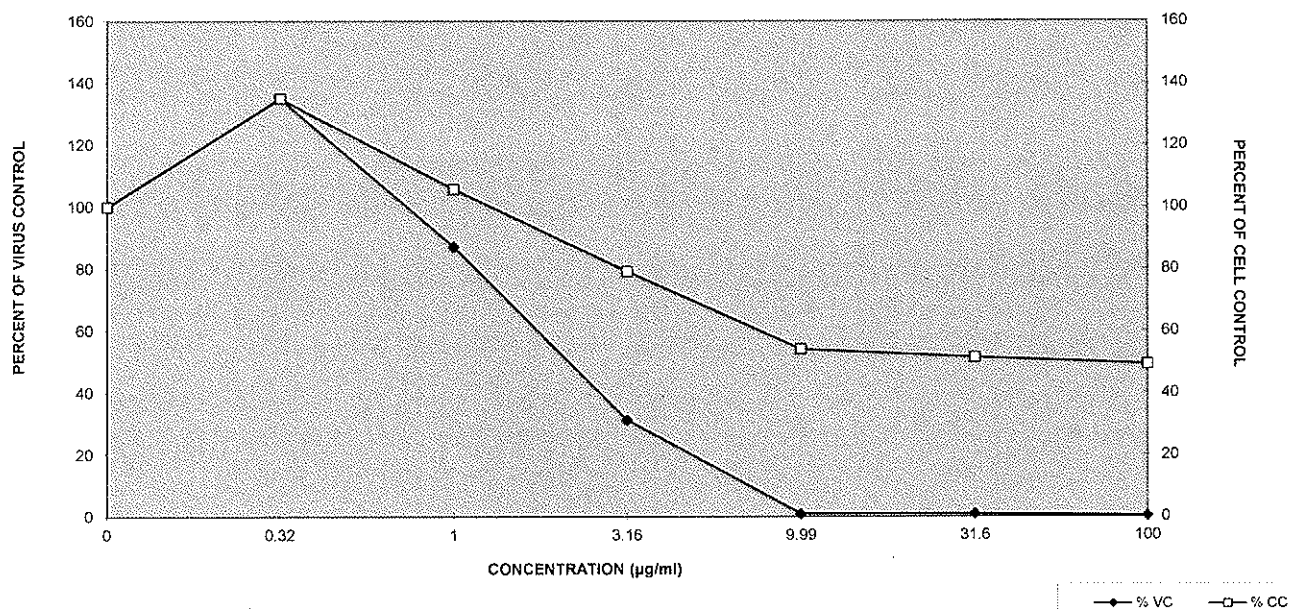
Virus:	HIV-1	Clade:	E	Technician:	Lu Yang	Setup Date:	6/12/13
Strain:	CMU02	Cells:	HUMAN PBMCS	PI:	Tracy Hartman	Read Date:	6/19/13
Tropism:	CXCR4	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	1.29	2.15	8.59
TC (µg/ml)	3.84	67.3	>100
Therapeutic Index (TI)	2.98	31.30	>11.64

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	1655.8	665.5149	100.00	1.373	0.09654347	100.00
0.32	2236.0	226.66275	135.04	1.853	0.09920983	135.01
1	1444.3	417.6809	87.23	1.452	0.1102656	105.80
3.16	518.0	124.46686	31.28	1.088	0.05519085	79.23
9.99	17.3	6.1101009	1.05	0.744	0.17308051	54.18
31.6	15.3	3.0550505	0.93	0.706	0.1043155	51.46
100	4.0	2	0.24	0.676	0.02568469	49.24

INHIBITION OF CXCR4 TROPIC CLADE E HIV-1_{CMU02} IN HUMAN PBMCS BY FPA



INHIBITION OF CXCR4 TROPIC CLADE E HIV-1_{CMU02} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.032	0.101	0.32	1	3.16	10
SAMPLE 1	1073.0	1361.0	66.0	22.0	28.0	16.0	6.0
SAMPLE 2	2381.0	1551.0	90.0	32.0	30.0	18.0	4.0
SAMPLE 3	1513.5	1747.0	108.0	48.0	36.0	26.0	4.0

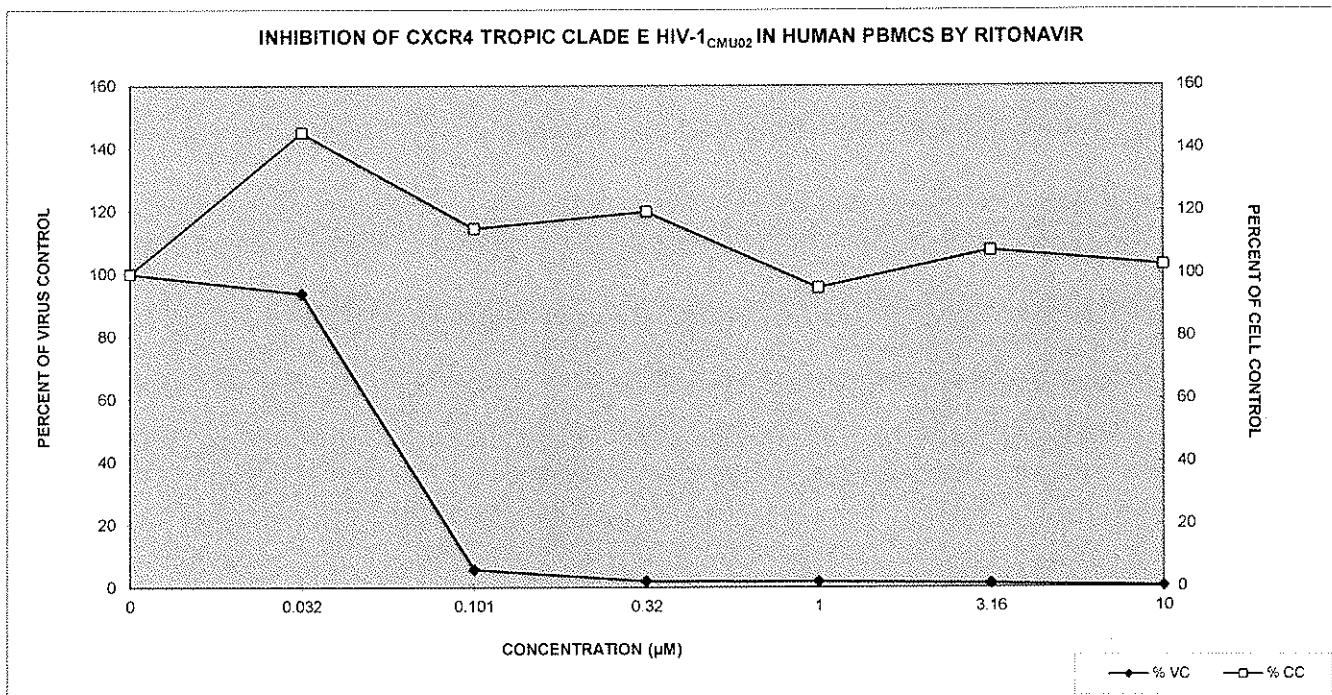
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.032	0.101	0.32	1	3.16	10
SAMPLE 1	1.4097	2.0260	1.6973	1.6461	1.1909	1.3366	1.4170
SAMPLE 2	1.2629	1.9443	1.5429	1.6470	1.3788	1.4272	1.3455
SAMPLE 3	1.4450	1.9996	1.4715	1.6407	1.3640	1.6611	1.4685

Virus:	HIV-1	Clade:	E	Technician:	Lu Yang	Setup Date:	6/12/13
Strain:	CMU02	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/19/13
Tropism:	CXCR4	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.0409	0.0567	0.127
TC (µM)	>10.0	>10.0	>10.0
Therapeutic Index (TI)	>244.50	>176.37	>78.74

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	1655.8	665.514901	100.00	1.373	0.096543	100.00
0.032	1553.0	193.007772	93.79	1.990	0.041693	144.99
0.101	94.7	11.7189306	5.72	1.571	0.115414	114.43
0.32	34.0	13.114877	2.05	1.645	0.003407	119.83
1	31.3	4.163332	1.89	1.311	0.104474	95.54
3.16	20.0	5.29150262	1.21	1.475	0.16744	107.47
10	4.7	1.15470054	0.28	1.410	0.06177	102.76



INHIBITION OF CXCR4 TROPIC CLADE E HIV-1_{CMU02} IN HUMAN PBMCs

BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	1073.0	1207.0	410.0	50.0	26.0	4.0	8.0
SAMPLE 2	2381.0	446.0	190.0	38.0	24.0	20.0	0.0
SAMPLE 3	1513.5	925.0	314.0	86.0	96.0	82.0	6.0

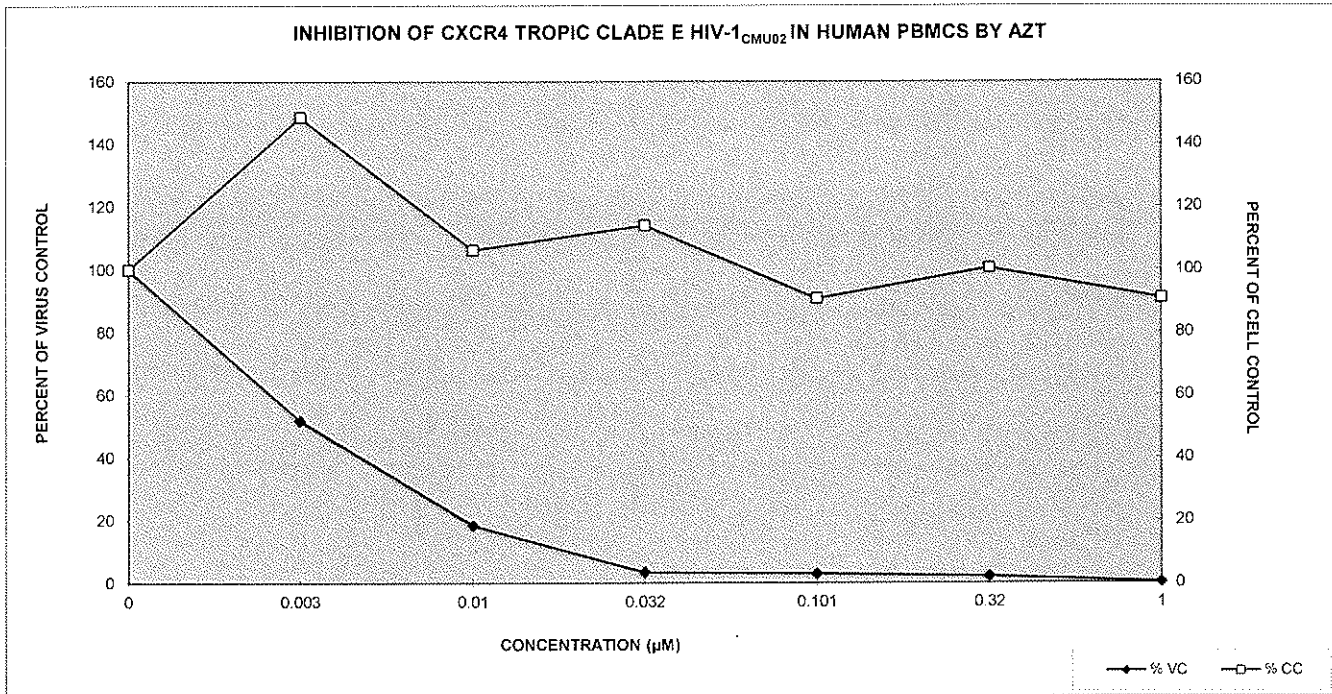
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	1.4097	2.0225	1.4917	1.6022	1.1445	1.3685	0.7054
SAMPLE 2	1.2629	2.1437	1.4541	1.5993	1.3547	1.5067	1.4730
SAMPLE 3	1.4450	1.9495	1.4282	1.4962	1.2369	1.2629	1.5633

Virus: HIV-1 Clade: E Technician: Lu Yang Setup Date: 6/12/13
 Strain: CMU02 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/19/13
 Tropism: CXCR4 Project #: 306-01-01 Client: CJSC

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	<0.00300	0.00321	0.0285
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>333.33	>311.53	>35.09

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	1655.8	665.514901	100.00	1.373	0.096543	100.00
0.003	859.3	384.72631	51.90	2.039	0.098092	148.53
0.01	304.7	110.29657	18.40	1.458	0.031929	106.23
0.032	58.0	24.979992	3.50	1.566	0.060379	114.09
0.101	48.7	41.0040648	2.94	1.245	0.105355	90.74
0.32	35.3	41.1987055	2.13	1.379	0.122263	100.50
1	4.7	4.163332	0.28	1.247	0.471409	90.87



INHIBITION OF CCR5 TROPIC CLADE F HIV-1_{93BR029} IN HUMAN PBMCS BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	11512.5	17905.0	10313.0	2418.0	258.0	182.0	160.0
SAMPLE 2	7916.0	17379.0	10329.0	1971.0	224.0	166.0	172.0
SAMPLE 3	19235.5	7678.0	9171.0	3024.0	268.0	180.0	174.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.8117	2.6984	2.1758	1.7804	1.8728	2.0398	2.2751
SAMPLE 2	2.3060	2.5971	1.6791	1.5677	1.4806	1.8393	2.0363
SAMPLE 3	2.6320	2.4576	1.7586	1.9151	1.5730	2.0176	1.6801

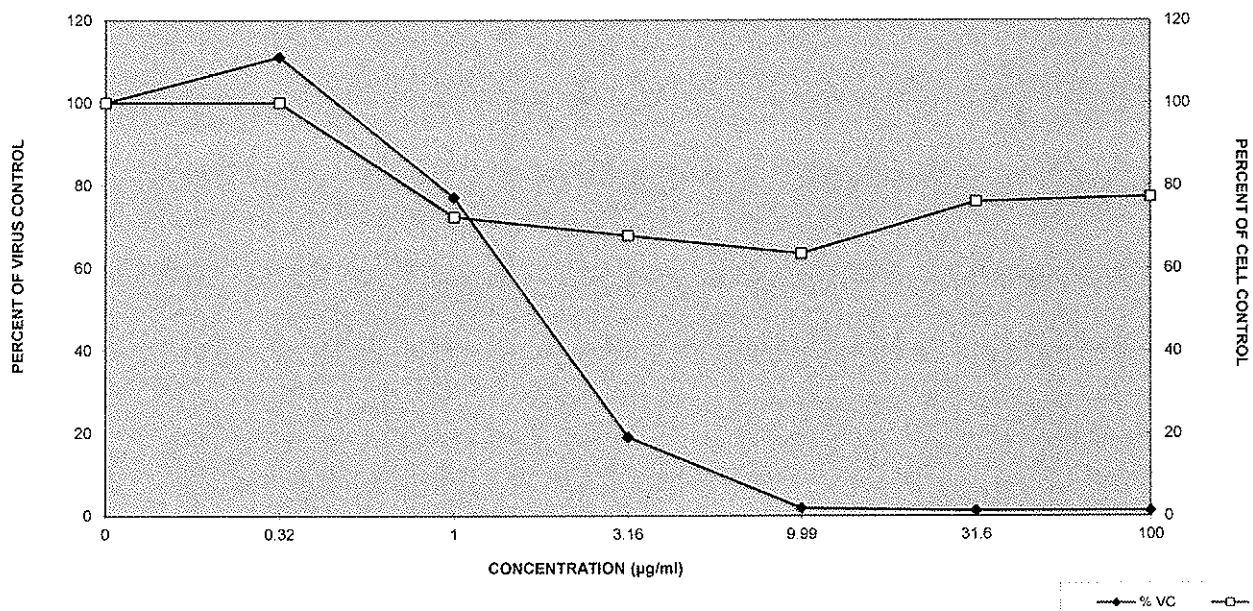
Virus:	HIV-1	Clade:	F	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	93BR029	Cells:	HUMAN PBMCS	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CISC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	1.04	1.71	8.14
TC (µg/ml)	0.90	>100	>100
Therapeutic Index (TI)	0.87	>58.48	>12.29

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	12888.0	5783.7505	100.00	2.583	0.25635281	100.00
0.32	14320.7	5758.7268	111.12	2.584	0.12090394	100.04
1	9937.7	664.001	77.11	1.871	0.26679798	72.44
3.16	2471.0	528.49693	19.17	1.754	0.17515333	67.91
9.99	250.0	23.065125	1.94	1.642	0.20503603	63.57
31.6	176.0	8.7177979	1.37	1.966	0.10991207	76.09
100	168.7	7.5718778	1.31	1.997	0.29942414	77.31

INHIBITION OF CCR5 TROPIC CLADE F HIV-1_{93BR029} IN HUMAN PBMCS BY FPA



INHIBITION OF CCR5 TROPIC CLADE F HIV-1_{93BR029} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	11512.5	7771.0	9915.0	10957.0	14544.0	9631.0	2052.0
SAMPLE 2	7916.0	4858.0	8979.0	7737.0	11560.0	6100.0	2278.0
SAMPLE 3	19235.5	10921.0	9418.0	10440.0	7380.0	5880.0	3332.0

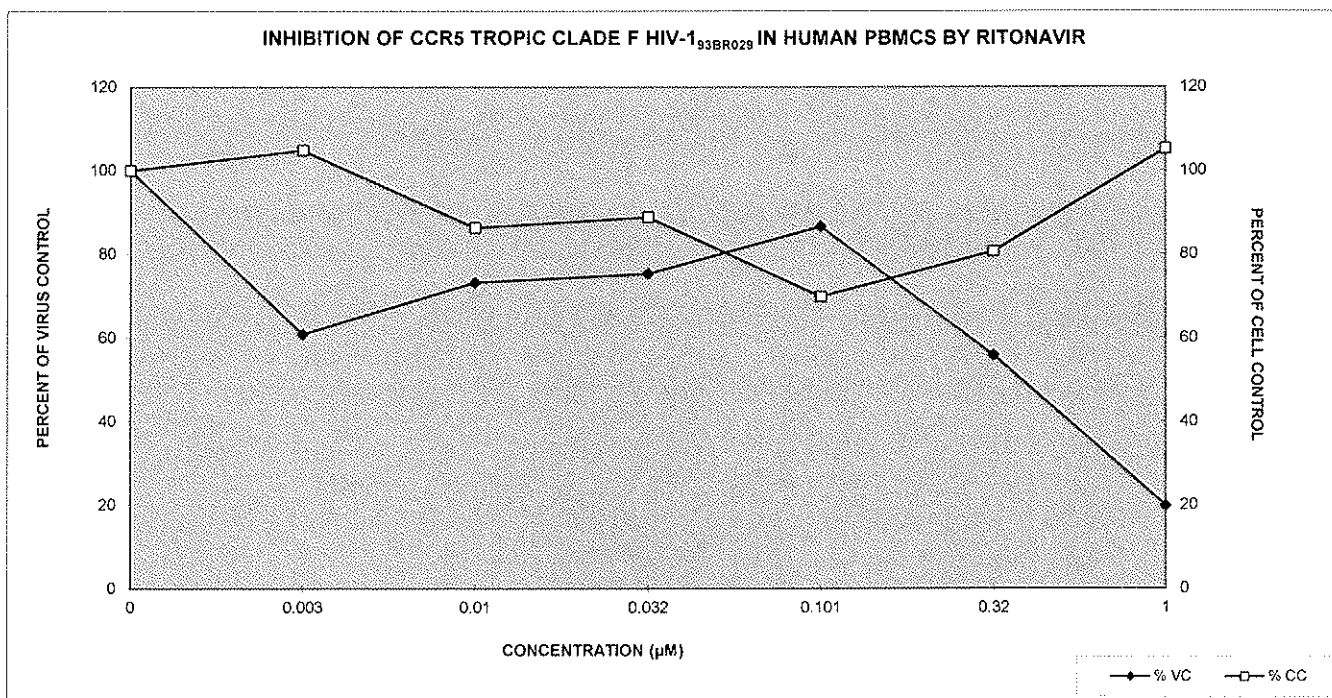
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.7324	2.0992	2.2215	1.7945	2.0948	2.9236
SAMPLE 2	2.3060	2.6502	2.2991	2.5874	2.0357	2.2827	2.6008
SAMPLE 3	2.6320	2.7406	2.2893	2.0741	1.5853	1.8759	2.6306

Virus:	HIV-1	Clade:	F	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	93BR029	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	<0.00300	0.385	>1.0
TC (µM)	0.07	>1.0	>1.0
Therapeutic Index (TI)	>23.33	>2.60	1

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	12888.0	5783.75053	100.00	2.583	0.256353	100.00
0.003	7850.0	3032.27192	60.91	2.708	0.049994	104.82
0.01	9437.3	468.299406	73.23	2.229	0.11269	86.29
0.032	9711.3	1729.25311	75.35	2.294	0.264287	88.82
0.101	11161.3	3598.60047	86.60	1.805	0.225389	69.88
0.32	7203.7	2105.00839	55.89	2.084	0.203597	80.69
1	2554.0	683.177868	19.82	2.718	0.178389	105.23



INHIBITION OF CCR5 TROPIC CLADE F HIV-1_{93BR029} IN HUMAN PBMCs

BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	11512.5	5405.0	1507.0	788.0	246.0	220.0	202.0
SAMPLE 2	7916.0	7762.0	3770.0	486.0	168.0	176.0	224.0
SAMPLE 3	19235.5	7459.0	1601.0	548.0	316.0	204.0	164.0

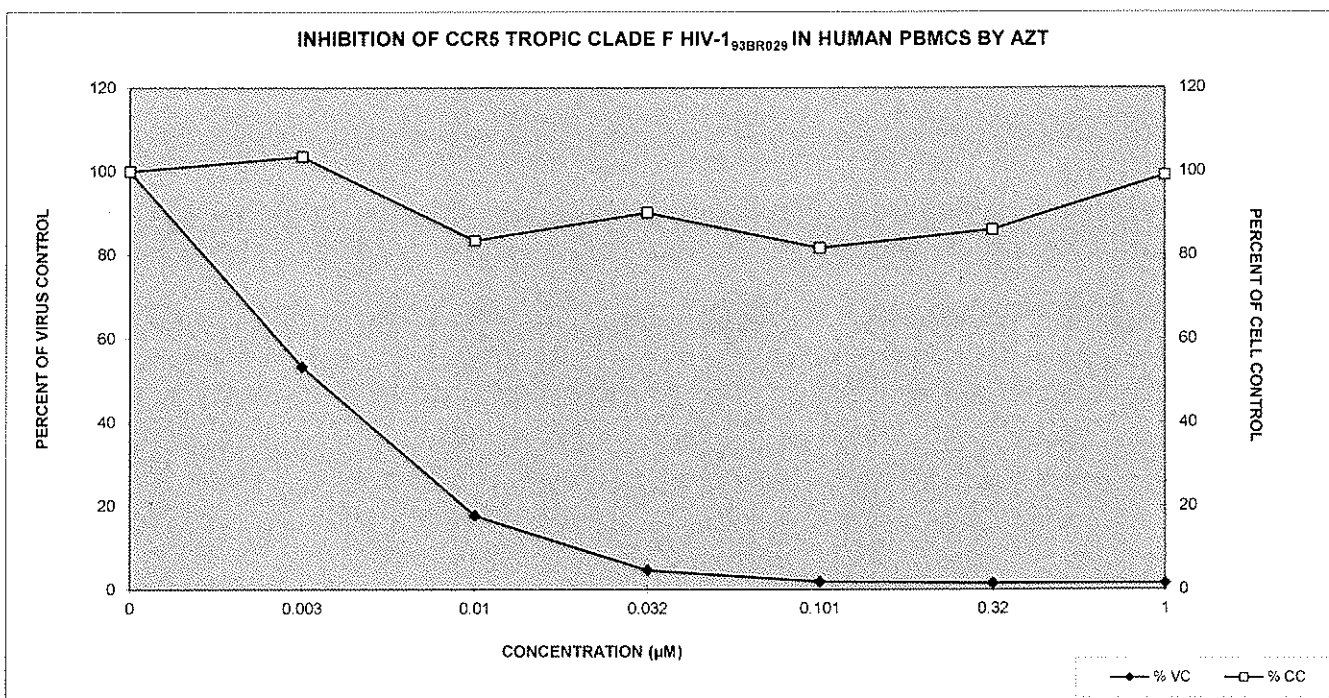
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.6920	2.1698	2.2944	2.0121	1.8983	2.2751
SAMPLE 2	2.3060	2.6313	2.1969	2.3375	2.2415	2.3045	2.9041
SAMPLE 3	2.6320	2.6995	2.1024	2.3538	2.0771	2.4681	2.5008

Virus: HIV-1 Clade: F Technician: Lu Yang Setup Date: 5/28/13
 Strain: 93BR029 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/4/13
 Tropism: CCR5 Project #: 306-01-01 Client: CISC

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	<0.00300	0.00336	0.0312
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>333.33	>297.62	>32.05

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	12888.0	5783.75053	100.00	2.583	0.256353	100.00
0.003	6875.3	1282.32692	53.35	2.674	0.037399	103.52
0.01	2292.7	1280.2712	17.79	2.156	0.048661	83.48
0.032	607.3	159.503396	4.71	2.329	0.030691	90.14
0.101	243.3	74.0360273	1.89	2.110	0.118235	81.69
0.32	200.0	22.2710575	1.55	2.224	0.293381	86.08
1	196.7	30.3534732	1.53	2.560	0.318651	99.10



INHIBITION OF CCR5 TROPIC CLADE F HIV-1_{93BR029} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	17708.0	19686.0	16052.0	7845.0	854.0	314.0	314.0
SAMPLE 2	17615.5	18061.0	15290.0	9969.0	915.0	394.0	266.0
SAMPLE 3	20135.5	22057.0	15097.0	4570.0	528.0	488.0	396.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.2185	2.7399	2.1703	2.5250	2.1383	1.7267	1.7505
SAMPLE 2	1.8423	2.7282	2.0899	2.5461	1.9928	1.7973	1.8690
SAMPLE 3	2.2118	2.7589	2.3185	2.3703	1.9477	1.9701	1.8427

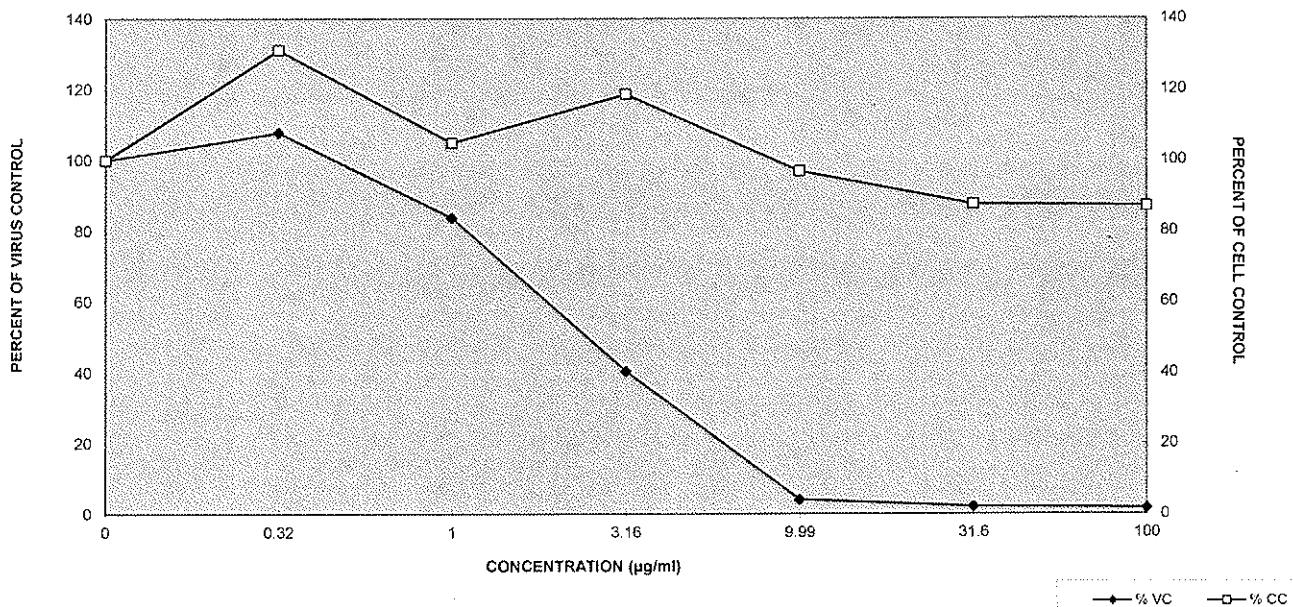
Virus: HIV-1 Clade: F Technician: Lu Yang Setup Date: 6/25/13
 Strain: 93BR029 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 7/2/13
 Tropism: CCR5 Project #: 306-01-01 Client: CJSC

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	1.26	2.45	9.72
TC (µg/ml)	>100	>100	>100
Therapeutic Index (TI)	>79.37	>40.82	>10.29

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	18486.3	1428.9689	100.00	2.091	0.21527629	100.00
0.32	19934.7	2009.5722	107.83	2.742	0.01549398	131.16
1	15479.7	504.96171	83.74	2.193	0.11596361	104.88
3.16	7461.3	2719.8714	40.36	2.480	0.09598866	118.63
9.99	765.7	208.0729	4.14	2.026	0.09960976	96.91
31.6	398.7	87.093819	2.16	1.831	0.12522497	87.59
100	325.3	65.736849	1.76	1.821	0.06222912	87.08

INHIBITION OF CCR5 TROPIC CLADE F HIV-1_{93BR029} IN HUMAN PBMCs BY FPA



INHIBITION OF CCR5 TROPIC CLADE F HIV-1_{93BR029} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	17708.0	15726.0	15440.0	7229.0	938.0	498.0	446.0
SAMPLE 2	17615.5	18850.0	18907.0	9972.0	1165.0	374.0	348.0
SAMPLE 3	20135.5	17556.0	18305.0	10113.0	714.0	372.0	390.0

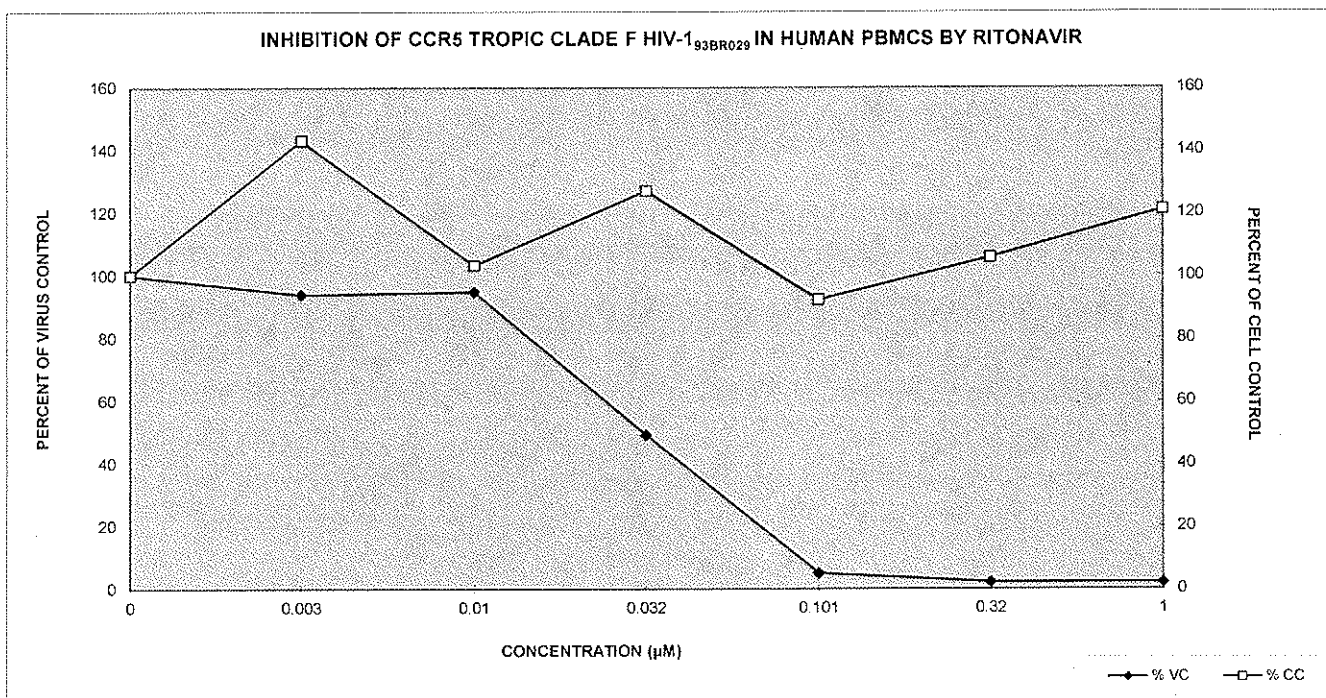
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.2185	3.0065	2.3378	2.8696	1.9534	2.1657	2.6133
SAMPLE 2	1.8423	2.9660	2.0735	2.5955	1.9570	2.3431	2.4286
SAMPLE 3	2.2118	3.0012	2.0663	2.5043	1.8821	2.1305	2.5569

Virus:	HIV-1	Clade:	F	Technician:	Lu Yang	Setup Date:	6/25/13
Strain:	93BR029	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	7/2/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.0166	0.0314	0.104
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>60.24	>31.85	>9.62

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	18486.3	1428.96889	100.00	2.091	0.215276	100.00
0.003	17377.3	1569.64497	94.00	2.991	0.022013	143.06
0.01	17550.7	1852.50812	94.94	2.159	0.154714	103.27
0.032	9104.7	1625.90416	49.25	2.656	0.190128	127.05
0.101	939.0	225.501663	5.08	1.931	0.042243	92.35
0.32	414.7	72.1757115	2.24	2.213	0.113951	105.85
1	394.7	49.1663842	2.13	2.533	0.094654	121.14



INHIBITION OF CCR5 TROPIC CLADE F HIV-1_{93BR029} IN HUMAN PBMCs

BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	17708.0	13123.0	7392.0	1287.0	324.0	302.0	282.0
SAMPLE 2	17615.5	11308.0	3513.0	804.0	320.0	320.0	376.0
SAMPLE 3	20135.5	11276.0	4210.0	466.0	620.0	418.0	306.0

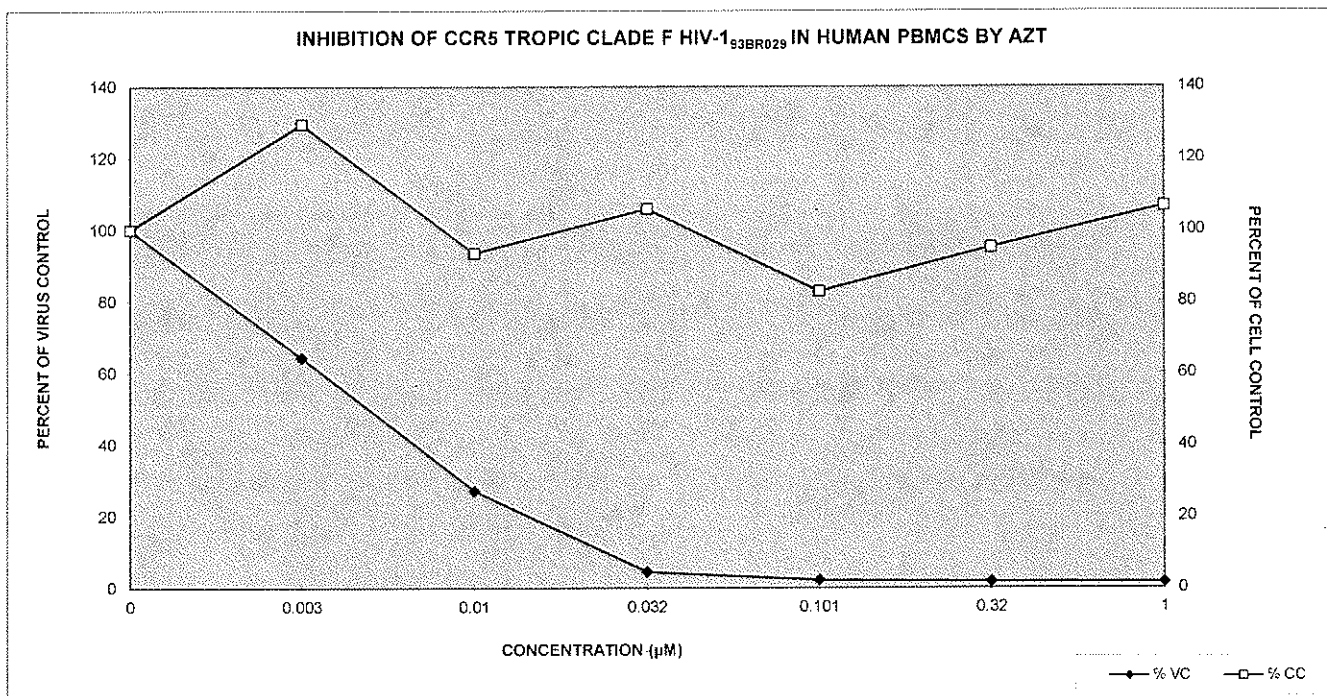
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.2185	2.8971	2.0651	2.3076	1.7804	2.0949	1.7505
SAMPLE 2	1.8423	2.6652	2.0317	2.0823	1.7156	2.0949	2.6160
SAMPLE 3	2.2118	2.5591	1.7708	2.2511	1.7004	1.7756	2.3241

Virus: HIV-1 Clade: F Technician: Lu Yang Setup Date: 6/25/13
 Strain: 93BR029 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 7/2/13
 Tropism: CCR5 Project #: 306-01-01 Client: CJSC

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	<0.00300	0.00478	0.0314
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>333.33	>209.21	>31.85

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	18486.3	1428.96889	100.00	2.091	0.215276	100.00
0.003	11902.3	1057.24942	64.38	2.707	0.172858	129.47
0.01	5038.3	2067.91255	27.25	1.956	0.16114	93.54
0.032	852.3	412.628566	4.61	2.214	0.117222	105.87
0.101	421.3	172.062004	2.28	1.732	0.042485	82.84
0.32	346.7	62.4286259	1.88	1.988	0.184348	95.10
1	321.3	48.8398744	1.74	2.230	0.440342	106.66



INHIBITION OF CCR5 TROPIC CLADE G HIV-1_{G3} IN HUMAN PBMCS BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	8218.5	15985.0	10383.0	4167.0	248.0	220.0	172.0
SAMPLE 2	13527.0	10121.0	4376.0	1765.0	384.0	192.0	160.0
SAMPLE 3	16259.5	15090.0	3475.0	3615.0	324.0	140.0	120.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.8117	2.6984	2.1758	1.7804	1.8728	2.0398	2.2751
SAMPLE 2	2.3060	2.5971	1.6791	1.5677	1.4806	1.8393	2.0363
SAMPLE 3	2.6320	2.4576	1.7586	1.9151	1.5730	2.0176	1.6801

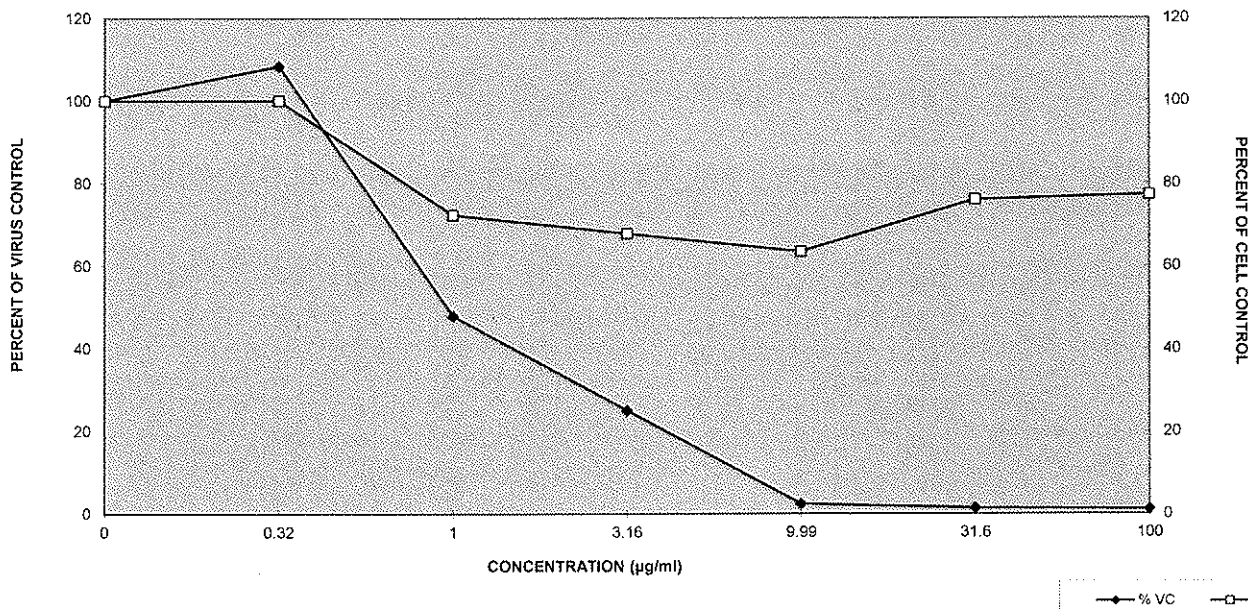
Virus: HIV-1 Clade: G Technician: Lu Yang Setup Date: 5/28/13
 Strain: G3 Cells: HUMAN PBMCS PI: Tracy Hartman Read Date: 6/4/13
 Tropism: CCR5 Project #: 306-01-01 Client: CJSC

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	0.601	0.963	8.80
TC (µg/ml)	0.90	>100	>100
Therapeutic Index (TI)	1.50	>103.84	>11.36

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	12668.3	4088.6919	100.00	2.583	0.25635281	100.00
0.32	13732.0	3159.0738	108.40	2.584	0.12090394	100.04
1	6078.0	3755.3587	47.98	1.871	0.26679798	72.44
3.16	3182.3	1258.0943	25.12	1.754	0.17515333	67.91
9.99	318.7	68.156682	2.52	1.642	0.20503603	63.57
31.6	184.0	40.595566	1.45	1.966	0.10991207	76.09
100	150.7	27.227437	1.19	1.997	0.29942414	77.31

INHIBITION OF CCR5 TROPIC CLADE G HIV-1_{G3} IN HUMAN PBMCS BY FPA



INHIBITION OF CCR5 TROPIC CLADE G HIV-1_{G3} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	8218.5	10825.0	7565.0	7472.0	11197.0	8616.0	9066.0
SAMPLE 2	13527.0	17808.0	9286.0	6863.0	11776.0	7268.0	11530.0
SAMPLE 3	16259.5	13533.0	15511.0	7456.0	11570.0	6140.0	8934.0

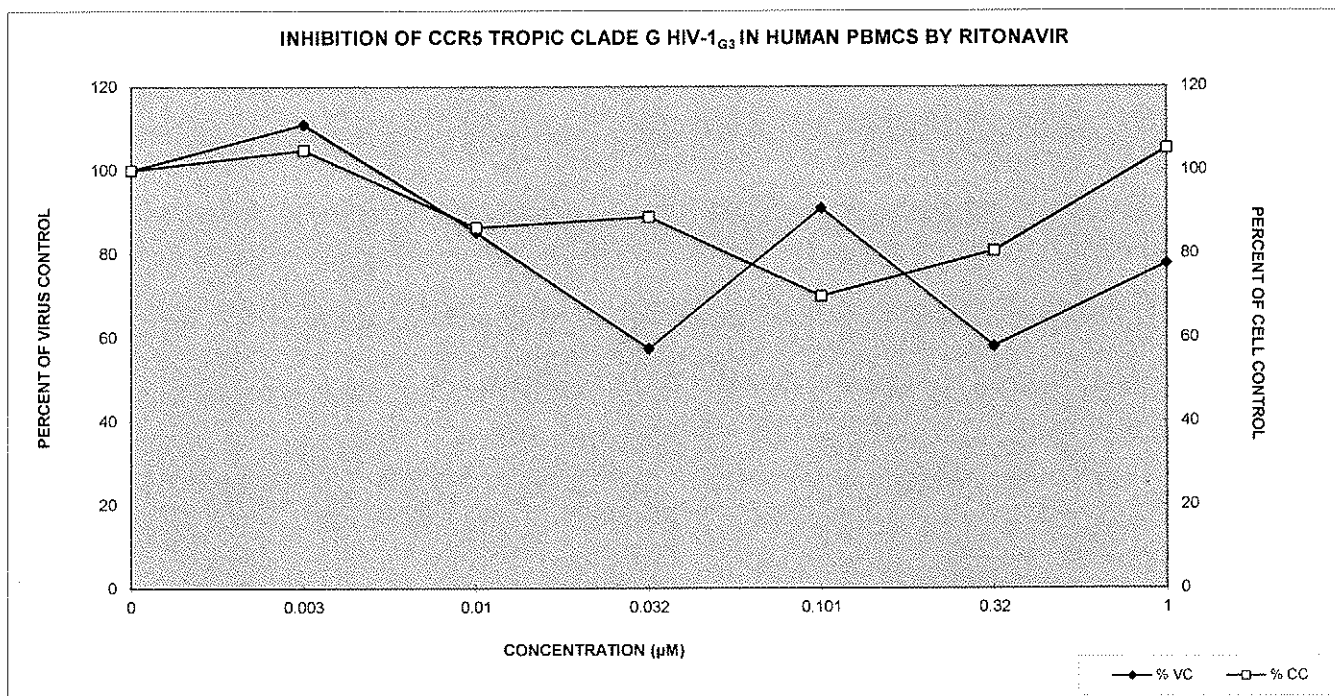
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.7324	2.0992	2.2215	1.7945	2.0948	2.9236
SAMPLE 2	2.3060	2.6502	2.2991	2.5874	2.0357	2.2827	2.6008
SAMPLE 3	2.6320	2.7405	2.2893	2.0741	1.5853	1.8759	2.6306

Virus:	HIV-1	Clade:	G	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	G3	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.0153	>1.0	>1.0
TC (µM)	0.07	>1.0	>1.0
Therapeutic Index (TI)	4.58		

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	12668.3	4088.69192	100.00	2.583	0.256353	100.00
0.003	14055.3	3520.68123	110.95	2.708	0.049994	104.82
0.01	10787.3	4180.33854	85.15	2.229	0.11269	86.29
0.032	7263.7	347.079722	57.34	2.294	0.264287	88.82
0.101	11514.3	293.486513	90.89	1.805	0.225389	69.88
0.32	7341.3	1239.6279	57.95	2.084	0.203597	80.69
1	9843.3	1462.18649	77.70	2.718	0.178389	105.23



INHIBITION OF CCR5 TROPIC CLADE G HIV-1_{G3} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	8218.5	10965.0	1157.0	236.0	188.0	160.0	144.0
SAMPLE 2	13527.0	5544.0	1115.0	250.0	142.0	140.0	156.0
SAMPLE 3	16259.5	9475.0	3669.0	230.0	178.0	166.0	154.0

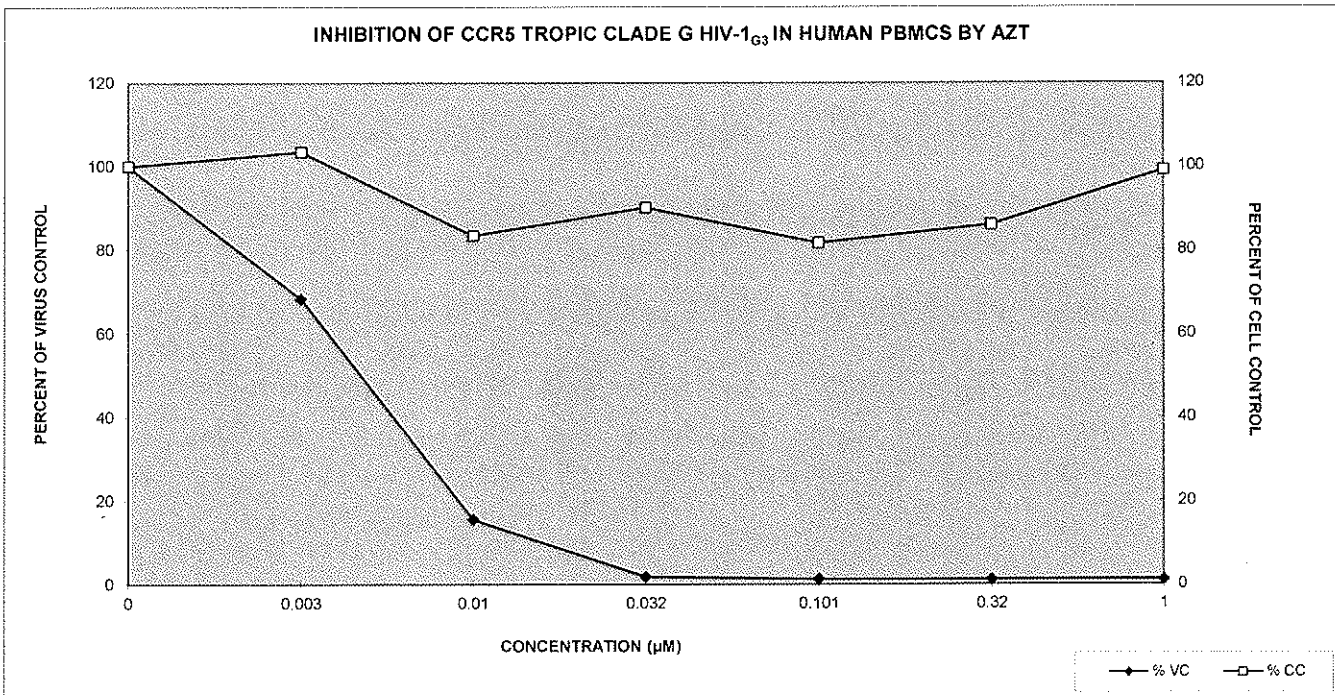
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.6920	2.1698	2.2944	2.0121	1.8983	2.2751
SAMPLE 2	2.3060	2.6313	2.1969	2.3375	2.2415	2.3045	2.9041
SAMPLE 3	2.6320	2.6995	2.1024	2.3538	2.0771	2.4681	2.5008

Virus: HIV-1 Clade: G Technician: Lu Yang Setup Date: 5/28/13
 Strain: G3 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/4/13
 Tropism: CCR5 Project #: 306-01-01 Client: CJSC

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	<0.00300	0.00456	0.0246
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>333.33	>219.30	>40.65

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	12668.3	4088.69192	100.00	2.583	0.256353	100.00
0.003	8661.3	2800.59821	68.37	2.674	0.037399	103.52
0.01	1980.3	1462.579	15.63	2.156	0.048661	83.48
0.032	238.7	10.2632029	1.88	2.329	0.030691	90.14
0.101	169.3	24.1936631	1.34	2.110	0.118235	81.69
0.32	155.3	13.6137186	1.23	2.224	0.293381	86.08
1	151.3	6.42910051	1.19	2.560	0.318651	99.10



INHIBITION OF CCR5 TROPIC CLADE O HIV-1_{BCF01} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	28107.5	27995.0	13567.0	10151.0	486.0	176.0	130.0
SAMPLE 2	24855.5	30572.0	12432.0	6288.0	568.0	200.0	174.0
SAMPLE 3	26906.0	24326.0	15476.0	4884.0	198.0	150.0	108.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2.8117	2.6984	2.1758	1.7804	1.8728	2.0398	2.2751
SAMPLE 2	2.3060	2.5971	1.6791	1.6677	1.4806	1.8393	2.0363
SAMPLE 3	2.6320	2.4576	1.7586	1.9151	1.5730	2.0176	1.6801

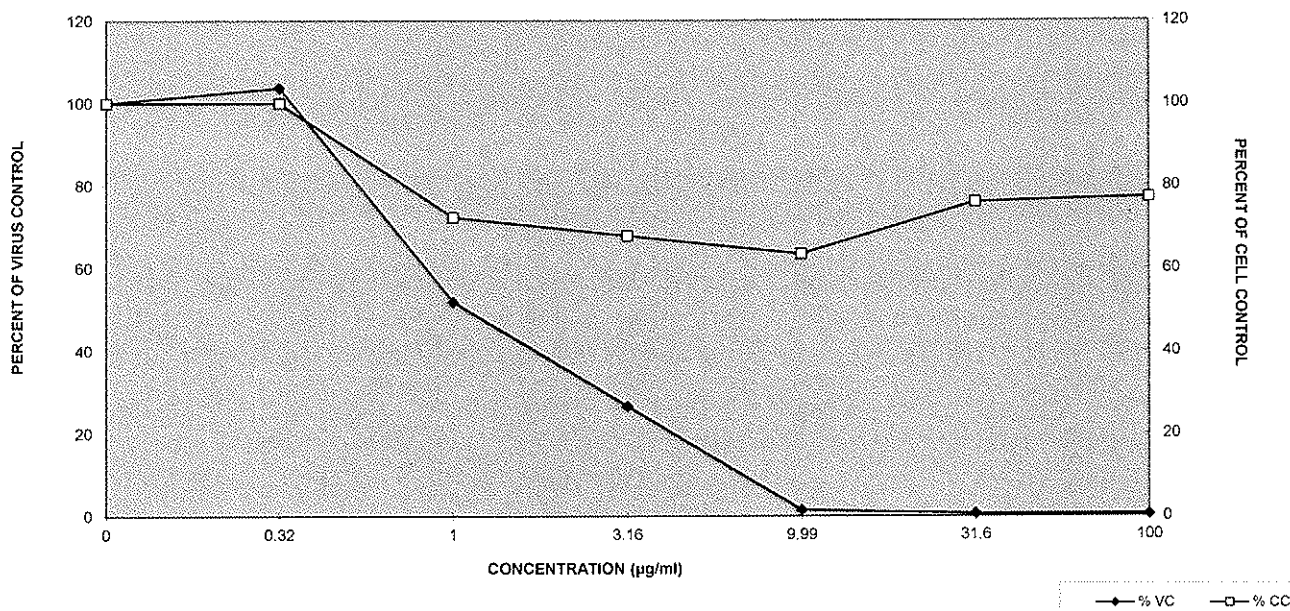
Virus: HIV-1 Clade: O Technician: Lu Yang Setup Date: 5/28/13
 Strain: BCF01 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/4/13
 Tropism: CCR5 Project #: 306-01-01 Client: CJSC

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	0.602	1.09	8.54
TC (µg/ml)	0.90	>100	>100
Therapeutic Index (TI)	1.50	>91.74	>11.71

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	26623.0	1644.367	100.00	2.583	0.25635281	100.00
0.32	27631.0	3138.8694	103.79	2.584	0.12090394	100.04
1	13825.0	1538.313	51.93	1.871	0.26679798	72.44
3.16	7107.7	2727.4919	26.70	1.754	0.17515333	67.91
9.99	417.3	194.32276	1.57	1.642	0.20503603	63.57
31.6	175.3	25.006666	0.66	1.966	0.10991207	76.09
100	137.3	33.605555	0.52	1.997	0.29942414	77.31

INHIBITION OF CCR5 TROPIC CLADE O HIV-1_{BCF01} IN HUMAN PBMCs BY FPA



INHIBITION OF CCR5 TROPIC CLADE G HIV-1_{G3} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	938.0	746.0	556.0	154.0	38.0	22.0	8.0
SAMPLE 2	2563.5	1345.0	465.0	126.0	18.0	20.0	2.0
SAMPLE 3	1571.5	841.0	230.0	236.0	18.0	16.0	16.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	1.4097	1.8595	1.3560	1.0786	0.9297	0.7951	0.7054
SAMPLE 2	1.2629	1.7507	1.4279	1.1466	0.5874	0.7323	0.6620
SAMPLE 3	1.4450	1.9488	1.5725	1.0373	0.7139	0.5914	0.6599

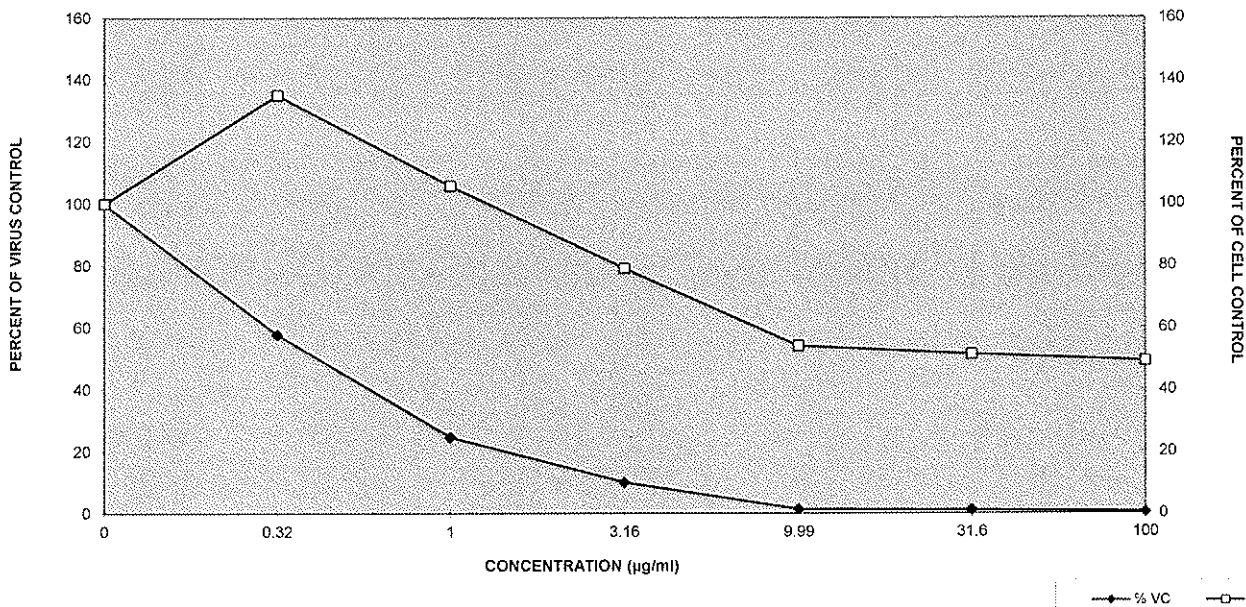
Virus: HIV-1 Clade: G Technician: Lu Yang Setup Date: 6/12/13
 Strain: G3 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/19/13
 Tropism: CCR5 Project #: 306-01-01 Client: CJC

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	<0.32000	0.418	6.27
TC (µg/ml)	3.84	67.3	>100
Therapeutic Index (TI)	>12.00	161.00	>15.95

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	1691.0	819.31236	100.00	1.373	0.09654347	100.00
0.32	977.3	321.93219	57.80	1.853	0.09920983	135.01
1	417.3	168.36072	24.68	1.452	0.1102656	105.80
3.16	172.7	58.286648	10.21	1.088	0.05519085	79.23
9.99	24.7	11.547005	1.46	0.744	0.17308051	54.18
31.6	19.3	3.0550505	1.14	0.706	0.1043155	51.46
100	8.7	7.0237692	0.51	0.676	0.02568469	49.24

INHIBITION OF CCR5 TROPIC CLADE G HIV-1_{G3} IN HUMAN PBMCs BY FPA



INHIBITION OF CCR5 TROPIC CLADE G HIV-1_{G3} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.032	0.101	0.32	1	3.16	10
SAMPLE 1	938.0	544.0	96.0	30.0	14.0	14.0	2.0
SAMPLE 2	2563.5	911.0	142.0	34.0	26.0	24.0	2.0
SAMPLE 3	1571.5	1283.0	188.0	40.0	24.0	24.0	4.0

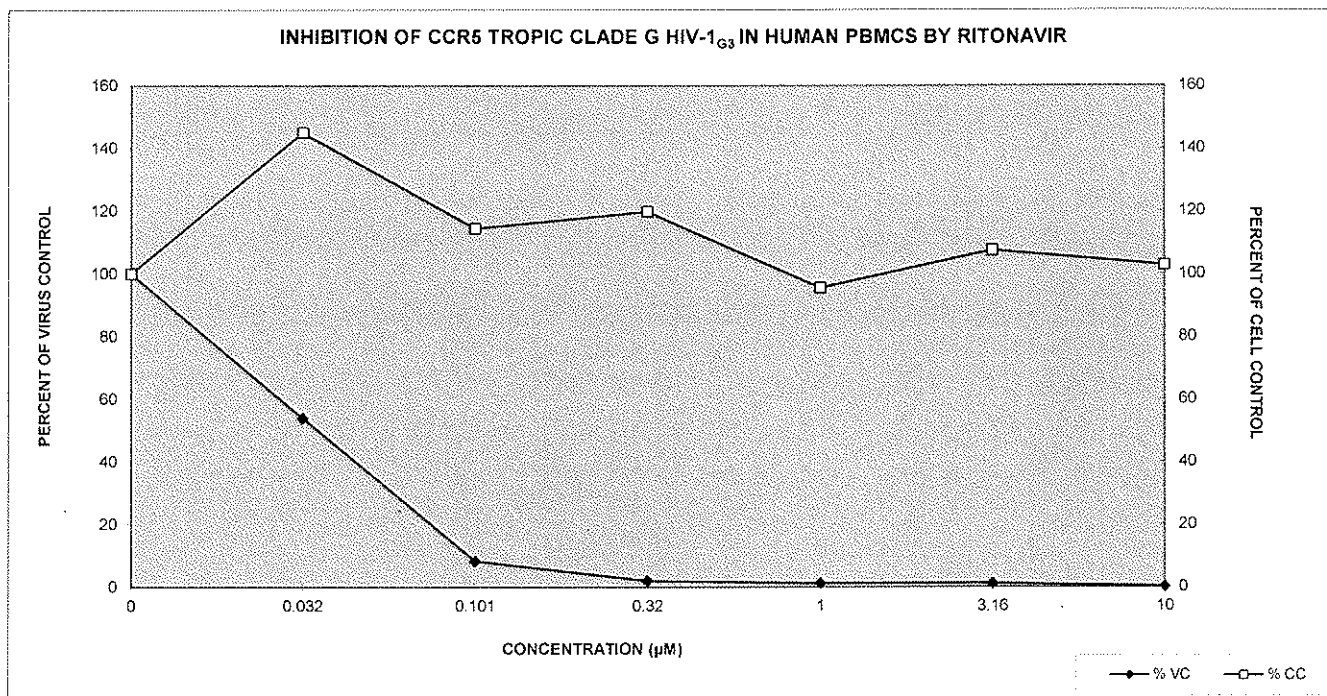
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.032	0.101	0.32	1	3.16	10
SAMPLE 1	1.4097	2.0260	1.6973	1.6451	1.1909	1.3365	1.4170
SAMPLE 2	1.2629	1.9443	1.5429	1.6470	1.3788	1.4272	1.3455
SAMPLE 3	1.4450	1.9996	1.4715	1.6407	1.3640	1.6611	1.4685

Virus:	HIV-1	Clade:	G	Technician:	Lu Yang	Setup Date:	6/12/13
Strain:	G3	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/19/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	<0.03200	0.0354	0.187
TC (µM)	>10.0	>10.0	>10.0
Therapeutic Index (TI)	>312.50	>282.49	>53.48

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	1691.0	819.312364	100.00	1.373	0.096543	100.00
0.032	912.7	369.502819	53.97	1.990	0.041693	144.99
0.101	142.0	46	8.40	1.571	0.115414	114.43
0.32	34.7	5.03322296	2.05	1.645	0.003407	119.83
1	21.3	6.42910051	1.26	1.311	0.104474	95.54
3.16	20.7	5.77350269	1.22	1.475	0.16744	107.47
10	2.7	1.15470054	0.16	1.410	0.06177	102.76



INHIBITION OF CCR5 TROPIC CLADE G HIV-1_{G3} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	938.0	174.0	132.0	26.0	36.0	12.0	8.0
SAMPLE 2	2563.5	96.0	42.0	22.0	18.0	8.0	10.0
SAMPLE 3	1571.5	437.0	108.0	176.0	102.0	104.0	6.0

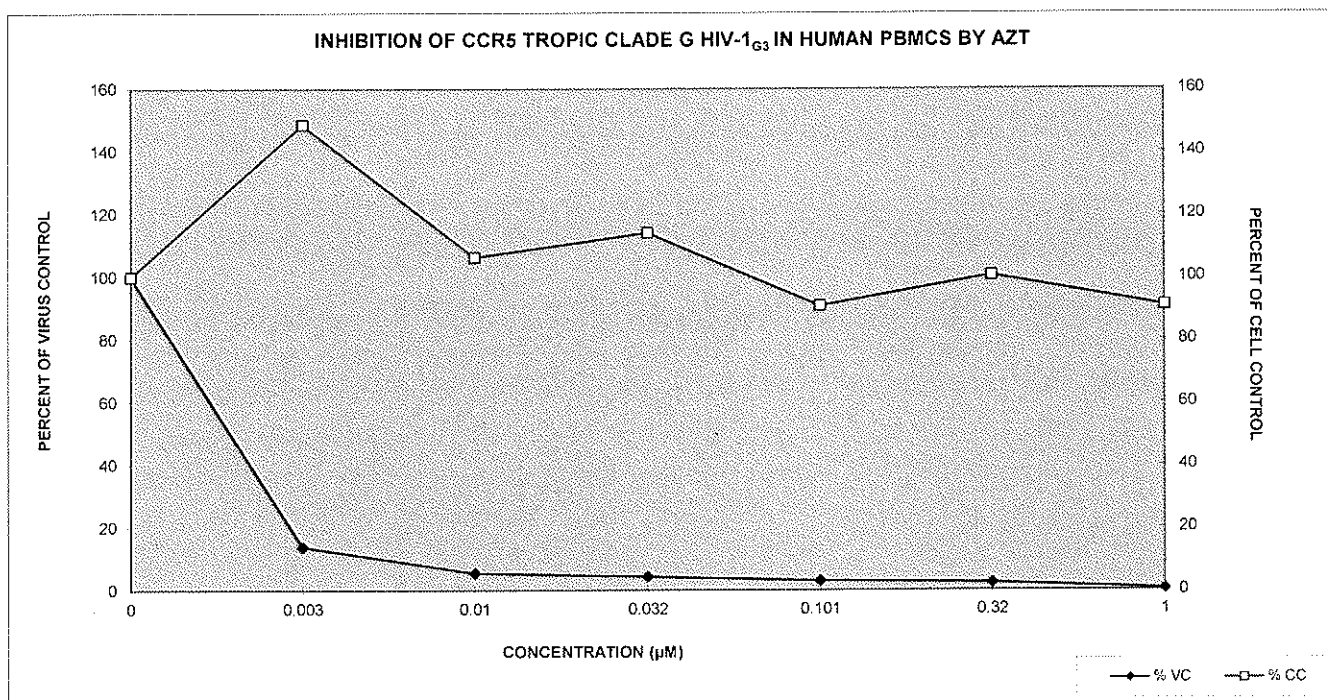
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	1.4097	2.0225	1.4917	1.6022	1.1445	1.3685	0.7054
SAMPLE 2	1.2629	2.1437	1.4541	1.5993	1.3547	1.5067	1.4730
SAMPLE 3	1.4450	1.9495	1.4282	1.4962	1.2369	1.2629	1.5633

Virus: HIV-1 Clade: G Technician: Lu Yang Setup Date: 6/12/13
 Strain: G3 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/19/13
 Tropism: CCR5 Project #: 306-01-01 Client: CISC

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	<0.00300	<0.00300	0.0177
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>333.33	>333.33	>56.50

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	1691.0	819.312364	100.00	1.373	0.096543	100.00
0.003	235.7	178.668221	13.94	2.039	0.098092	148.53
0.01	94.0	46.6047208	5.56	1.458	0.031929	106.23
0.032	74.7	87.7800281	4.42	1.566	0.060379	114.09
0.101	52.0	44.2266888	3.08	1.245	0.105355	90.74
0.32	41.3	54.3077649	2.44	1.379	0.122263	100.50
1	8.0	2	0.47	1.247	0.471409	90.87



INHIBITION OF CCR5 TROPIC CLADE O HIV-1_{BCF01} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	28107.5	27581.0	24678.0	21170.0	21611.0	21505.0	21822.0
SAMPLE 2	24855.5	29400.0	21035.0	17321.0	23674.0	18436.0	28004.0
SAMPLE 3	26906.0	26189.0	17038.0	22282.0	23206.0	14908.0	24998.0

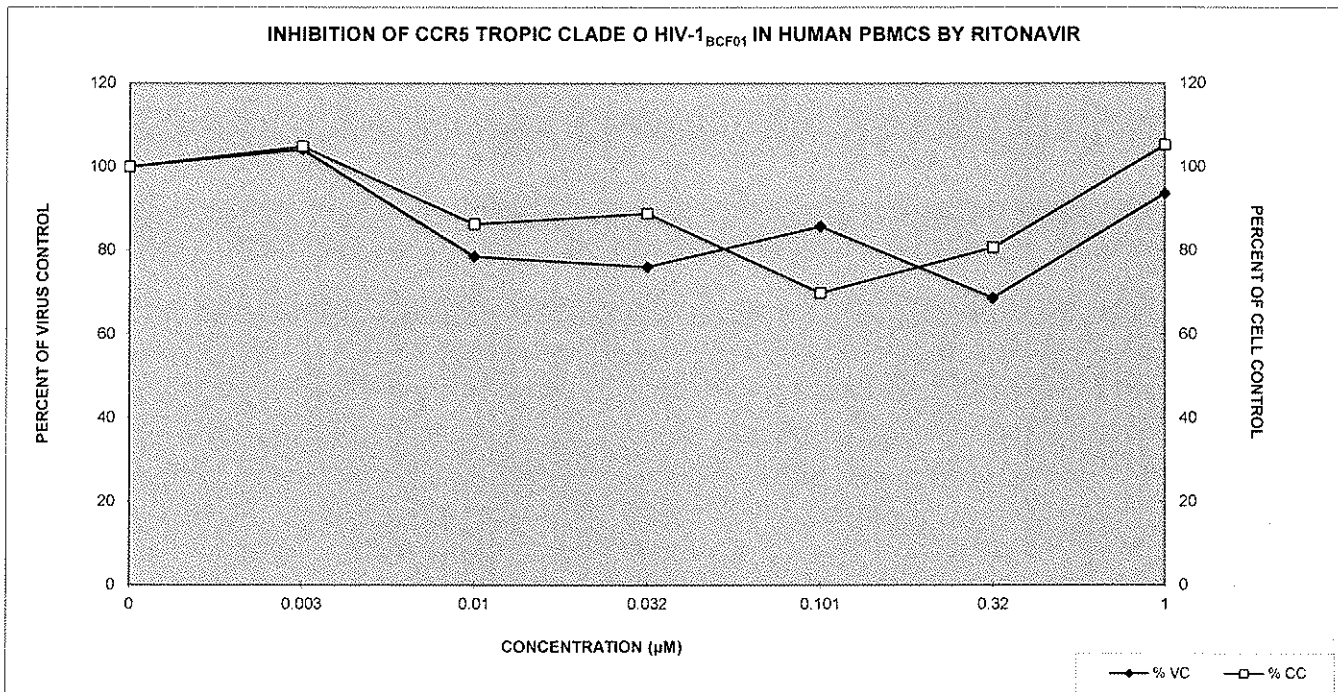
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.7324	2.0992	2.2215	1.7945	2.0948	2.9236
SAMPLE 2	2.3060	2.6502	2.2991	2.5874	2.0357	2.2827	2.6008
SAMPLE 3	2.6320	2.7405	2.2893	2.0741	1.5853	1.8759	2.6306

Virus:	HIV-1	Clade:	O	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	BCF01	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.209	>1.0	>1.0
TC (µM)	0.07	>1.0	>1.0
Therapeutic Index (TI)	0.33		

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	26623.0	1644.36698	100.00	2.583	0.256353	100.00
0.003	27723.3	1610.22493	104.13	2.708	0.049994	104.82
0.01	20917.0	3821.36664	78.57	2.229	0.11269	86.29
0.032	20257.7	2603.2949	76.09	2.294	0.264287	88.82
0.101	22830.3	1081.58973	85.75	1.805	0.225389	69.88
0.32	18283.0	3301.16025	68.67	2.084	0.203597	80.69
1	24941.3	3091.38955	93.68	2.718	0.178389	105.23



INHIBITION OF CCR5 TROPIC CLADE O HIV-1_{BCF01} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	28107.5	19435.0	15679.0	909.0	178.0	172.0	64.0
SAMPLE 2	24855.5	26116.0	8878.0	5706.0	268.0	82.0	84.0
SAMPLE 3	26906.0	23037.0	10481.0	2763.0	340.0	124.0	128.0

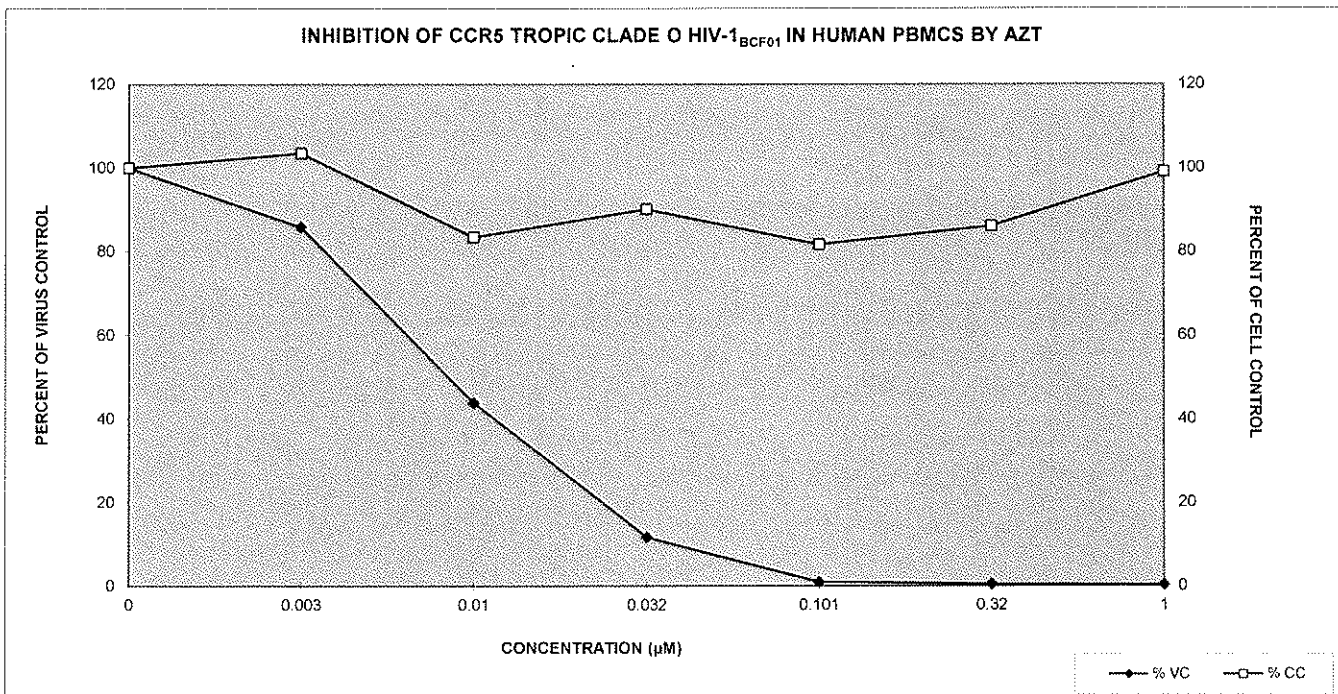
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.6920	2.1698	2.2944	2.0121	1.8983	2.2751
SAMPLE 2	2.3060	2.6313	2.1969	2.3375	2.2415	2.3045	2.9041
SAMPLE 3	2.6320	2.6995	2.1024	2.3538	2.0771	2.4681	2.5008

Virus: HIV-1 Clade: O Technician: Lu Yang Setup Date: 5/28/13
 Strain: BCF01 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/4/13
 Tropism: CCR5 Project #: 306-01-01 Client: CISC

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	0.00410	0.00839	0.0658
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>243.90	>119.19	>15.20

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	26623.0	1644.36698	100.00	2.583	0.256353	100.00
0.003	22862.7	3343.91004	85.88	2.674	0.037399	103.52
0.01	11679.3	3555.33435	43.87	2.156	0.048661	83.48
0.032	3126.0	2419.01406	11.74	2.329	0.030691	90.14
0.101	262.0	81.1664956	0.98	2.110	0.118235	81.69
0.32	126.0	45.033321	0.47	2.224	0.293381	86.08
1	92.0	32.7414111	0.35	2.560	0.318651	99.10



INHIBITION OF CCR5 TROPIC CLADE O HIV-1_{BCF01} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	28107.5	19435.0	15679.0	909.0	178.0	172.0	64.0
SAMPLE 2	24855.5	26116.0	8878.0	5706.0	268.0	82.0	84.0
SAMPLE 3	26906.0	23037.0	10481.0	2763.0	340.0	124.0	128.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2.8117	2.6920	2.1698	2.2944	2.0121	1.8983	2.2751
SAMPLE 2	2.3060	2.6313	2.1969	2.3375	2.2415	2.3045	2.9041
SAMPLE 3	2.6320	2.6995	2.1024	2.3538	2.0771	2.4681	2.5008

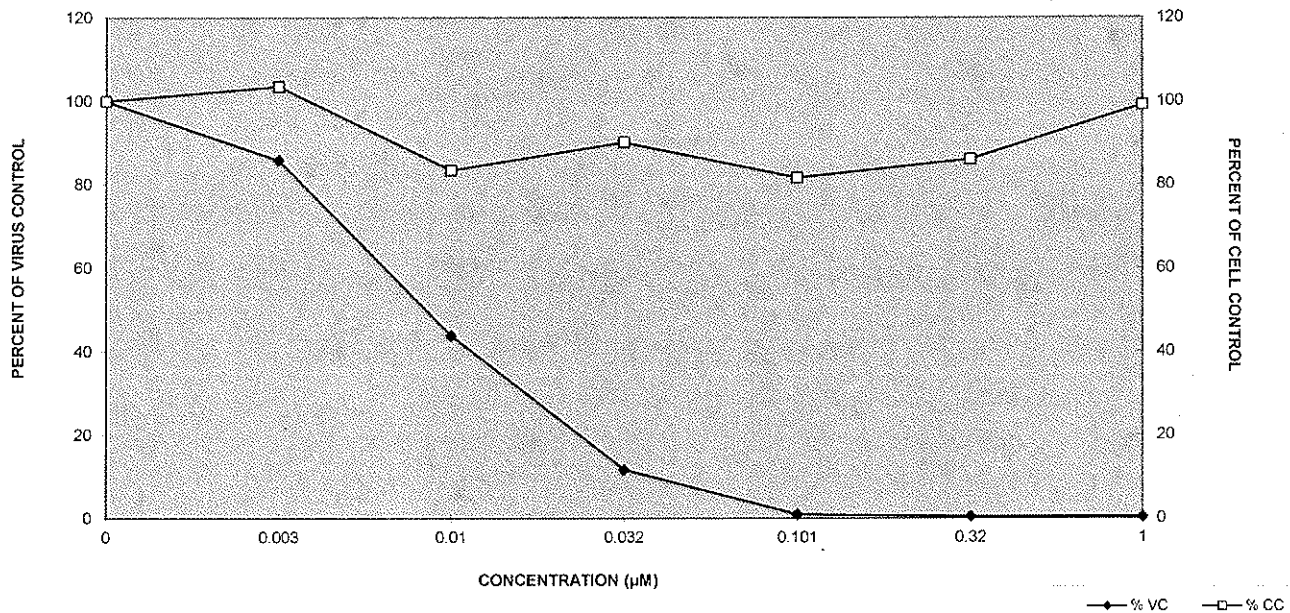
Virus:	HIV-1	Clade:	O	Technician:	Lu Yang	Setup Date:	5/28/13
Strain:	BCF01	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/4/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	0.00410	0.00839	0.0658
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>243.90	>119.19	>15.20

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	26623.0	1644.36698	100.00	2.583	0.256353	100.00
0.003	22862.7	3343.91004	85.88	2.674	0.037399	103.52
0.01	11679.3	3555.33435	43.87	2.156	0.048661	83.48
0.032	3126.0	2419.01406	11.74	2.329	0.030691	90.14
0.101	262.0	81.1664956	0.98	2.110	0.118235	81.69
0.32	126.0	45.033321	0.47	2.224	0.293381	86.08
1	92.0	32.7414111	0.35	2.560	0.318651	99.10

INHIBITION OF CCR5 TROPIC CLADE O HIV-1_{BCF01} IN HUMAN PBMCs BY AZT



INHIBITION OF CCR5 TROPIC CLADE O HIV-1_{BCF01} IN HUMAN PBMCs BY FPA

Raw Data (FPA)

RT VALUES (CPM)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	1645.0	2304.0	2236.0	624.0	16.0	8.0	16.0
SAMPLE 2	1455.0	1937.0	1671.0	770.0	12.0	8.0	12.0
SAMPLE 3	1414.0	1909.0	1451.0	636.0	472.0	12.0	14.0

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	1.4097	1.8595	1.3560	1.0786	0.9297	0.7951	0.7054
SAMPLE 2	1.2629	1.7507	1.4279	1.1465	0.5874	0.7323	0.6620
SAMPLE 3	1.4450	1.9488	1.5725	1.0373	0.7139	0.5914	0.6599

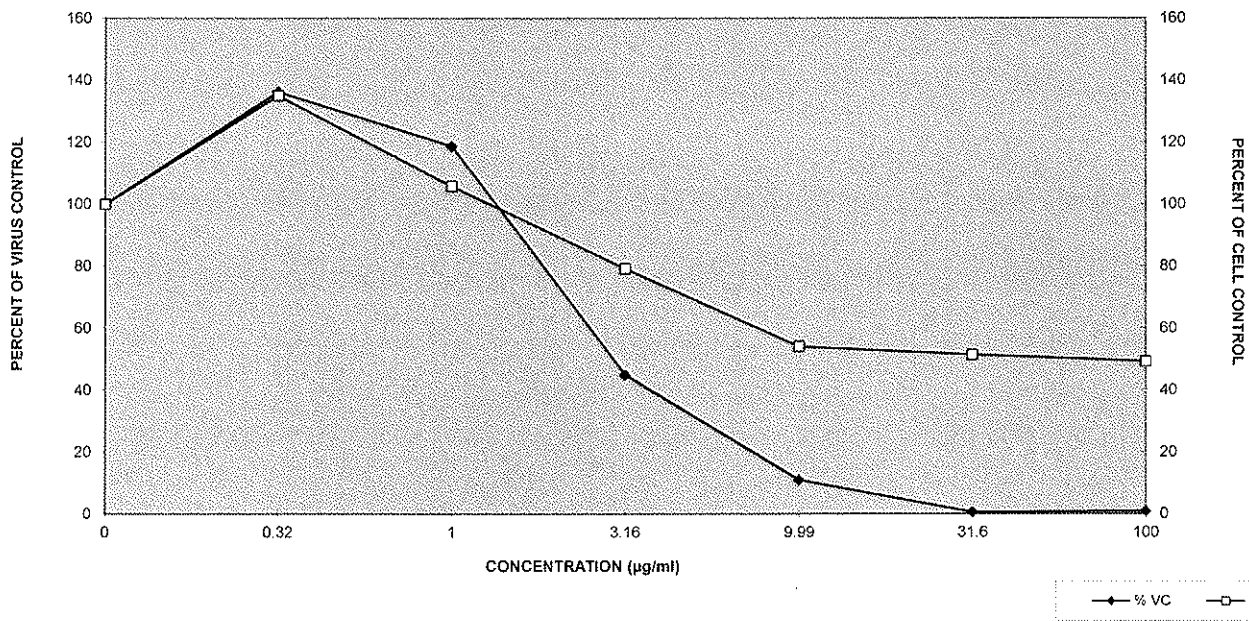
Virus: HIV-1 Clade: O Technician: Lu Yang Setup Date: 6/12/13
 Strain: BCF01 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/19/13
 Tropism: CCR5 Project #: 306-01-01 Client: CJSC

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	1.98	2.92	19.5
TC (µg/ml)	3.84	67.3	>100
Therapeutic Index (Ti)	1.94	23.05	>5.13

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	1504.7	123.24907	100.00	1.373	0.09654347	100.00
0.32	2050.0	220.41552	136.24	1.853	0.09920983	135.01
1	1786.0	404.93827	118.70	1.452	0.1102656	105.80
3.16	676.7	81.051424	44.97	1.088	0.05519085	79.23
9.99	166.7	264.43399	11.08	0.744	0.17308051	54.18
31.6	9.3	2.3094011	0.62	0.706	0.1043155	51.46
100	14.0	2	0.93	0.676	0.02568469	49.24

INHIBITION OF CCR5 TROPIC CLADE O HIV-1_{BCF01} IN HUMAN PBMCs BY FPA



INHIBITION OF CCR5 TROPIC CLADE O HIV-1_{BCF01} IN HUMAN PBMCs BY RITONAVIR

Raw Data (RITONAVIR)

RT VALUES (CPM)							
Conc (µM)	0	0.032	0.101	0.32	1	3.16	10
SAMPLE 1	1645.0	1794.0	1205.0	1291.0	605.0	10.0	8.0
SAMPLE 2	1455.0	2080.0	2248.0	1581.0	396.0	14.0	6.0
SAMPLE 3	1414.0	2712.0	2080.0	1751.0	629.0	12.0	4.0

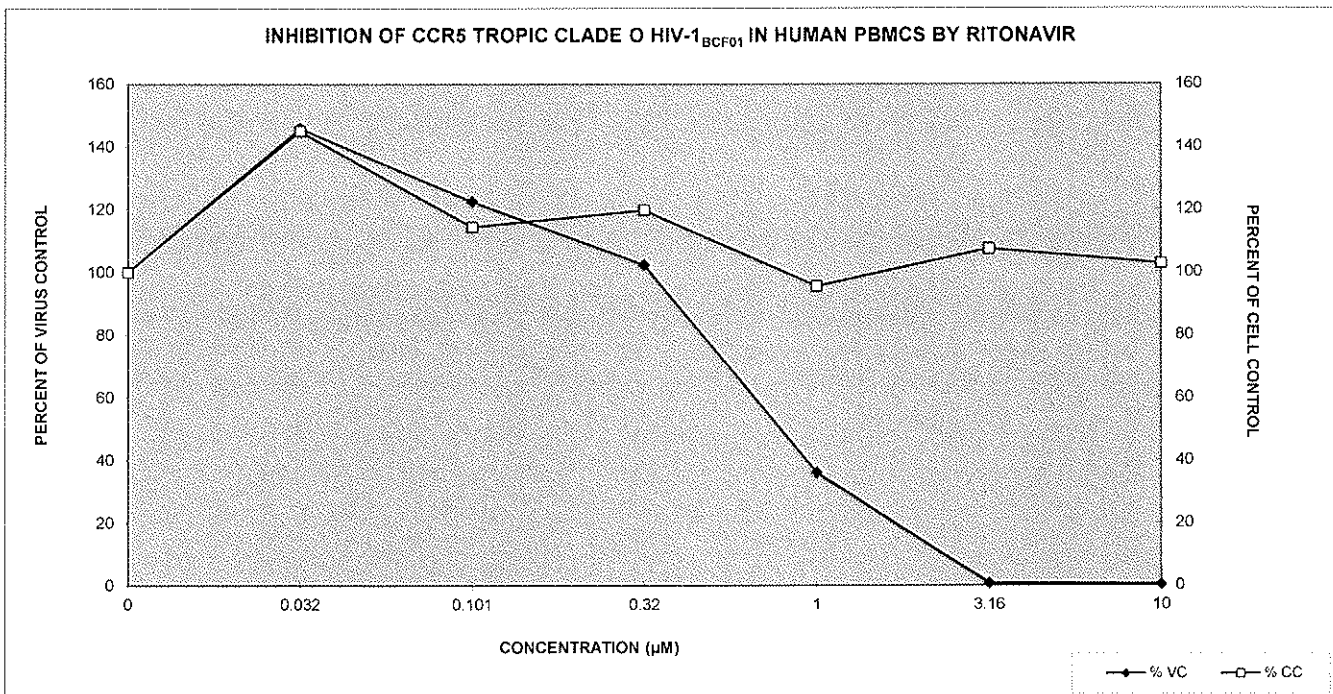
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.032	0.101	0.32	1	3.16	10
SAMPLE 1	1.4097	2.0260	1.6973	1.6461	1.1909	1.3366	1.4170
SAMPLE 2	1.2629	1.9443	1.5429	1.6470	1.3788	1.4272	1.3455
SAMPLE 3	1.4450	1.9996	1.4715	1.6407	1.3640	1.6611	1.4685

Virus:	HIV-1	Clade:	O	Technician:	Lu Yang	Setup Date:	6/12/13
Strain:	BCF01	Cells:	HUMAN PBMCs	PI:	Tracy Hartman	Read Date:	6/19/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.513	0.788	2.76
TC (µM)	>10.0	>10.0	>10.0
Therapeutic Index (TI)	>19.49	>12.69	>3.62

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	1504.7	123.24907	100.00	1.373	0.096543	100.00
0.032	2195.3	469.741773	145.90	1.990	0.041693	144.99
0.101	1844.3	560.014583	122.57	1.571	0.115414	114.43
0.32	1541.0	232.594067	102.41	1.645	0.003407	119.83
1	543.3	128.157455	36.11	1.311	0.104474	95.54
3.16	12.0	2	0.80	1.475	0.16744	107.47
10	6.0	2	0.40	1.410	0.06177	102.76



INHIBITION OF CCR5 TROPIC CLADE O HIV-1_{BCF01} IN HUMAN PBMCs BY AZT

Raw Data (AZT)

RT VALUES (CPM)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	1645.0	2186.0	750.0	596.0	58.0	8.0	12.0
SAMPLE 2	1455.0	1029.0	344.0	198.0	46.0	14.0	16.0
SAMPLE 3	1414.0	1760.0	859.0	410.0	56.0	54.0	70.0

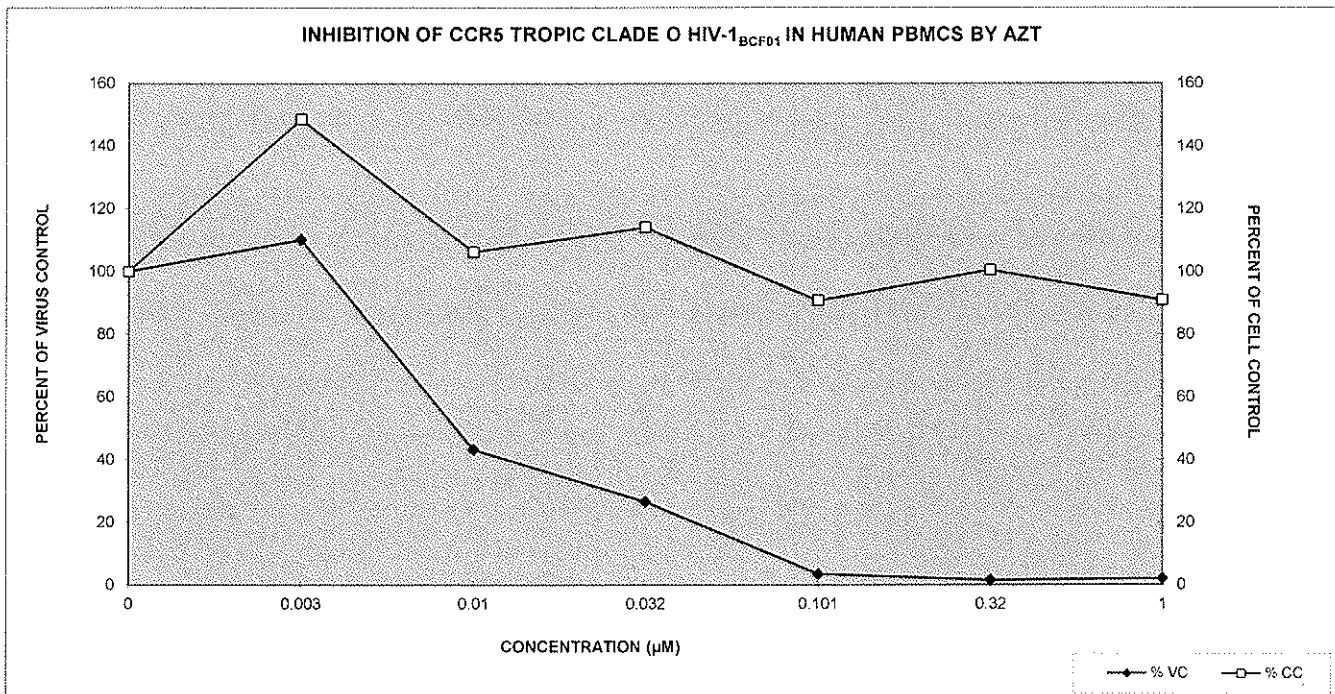
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	1.4097	2.0225	1.4917	1.6022	1.1445	1.3665	0.7054
SAMPLE 2	1.2629	2.1437	1.4541	1.5993	1.3547	1.5067	1.4730
SAMPLE 3	1.4450	1.9495	1.4282	1.4962	1.2369	1.2629	1.5633

Virus: HIV-1 Clade: O Technician: Lu Yang Setup Date: 6/12/13
 Strain: BCF01 Cells: HUMAN PBMCs PI: Tracy Hartman Read Date: 6/19/13
 Tropism: CCR5 Project #: 306-01-01 Client: CISC

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	0.00565	0.00886	0.0940
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>176.99	>112.87	>10.64

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	1504.7	123.24907	100.00	1.373	0.096543	100.00
0.003	1658.3	585.161801	110.21	2.039	0.098092	148.53
0.01	651.0	271.398231	43.27	1.458	0.031929	106.23
0.032	401.3	199.141491	26.67	1.566	0.060379	114.09
0.101	53.3	6.42910051	3.54	1.245	0.105355	90.74
0.32	25.3	25.0066658	1.68	1.379	0.122263	100.50
1	32.7	32.393415	2.17	1.247	0.471409	90.87



APPENDIX II

Anti-HIV-1 Monocyte/Macrophage Assay Results

INHIBITION OF CCR5 TROPIC CLADE B HIV-1_{Ba_L} IN Monocytes/Macrophages BY FPA

Raw Data (FPA)

p24 (pg/ml)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	2666.0	5844.4	1908.2	2819.6	2468.2	1.8	0.0
SAMPLE 2	2968.8	6320.8	3397.8	1027.6	2501.5	23.3	0.0
SAMPLE 3	3603.3	2531.9	2240.6	2388.2	925.5	34.8	23.6

TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
Conc (µg/ml)	0	0.32	1	3.16	9.99	31.6	100
SAMPLE 1	1.2384	0.6260	0.7484	0.5339	0.8120	1.0117	0.9348
SAMPLE 2	1.0407	0.7938	0.9029	0.8145	1.1340	1.3074	1.1026
SAMPLE 3	1.0645	1.0895	1.1107	1.1342	1.1355	1.0001	1.0601

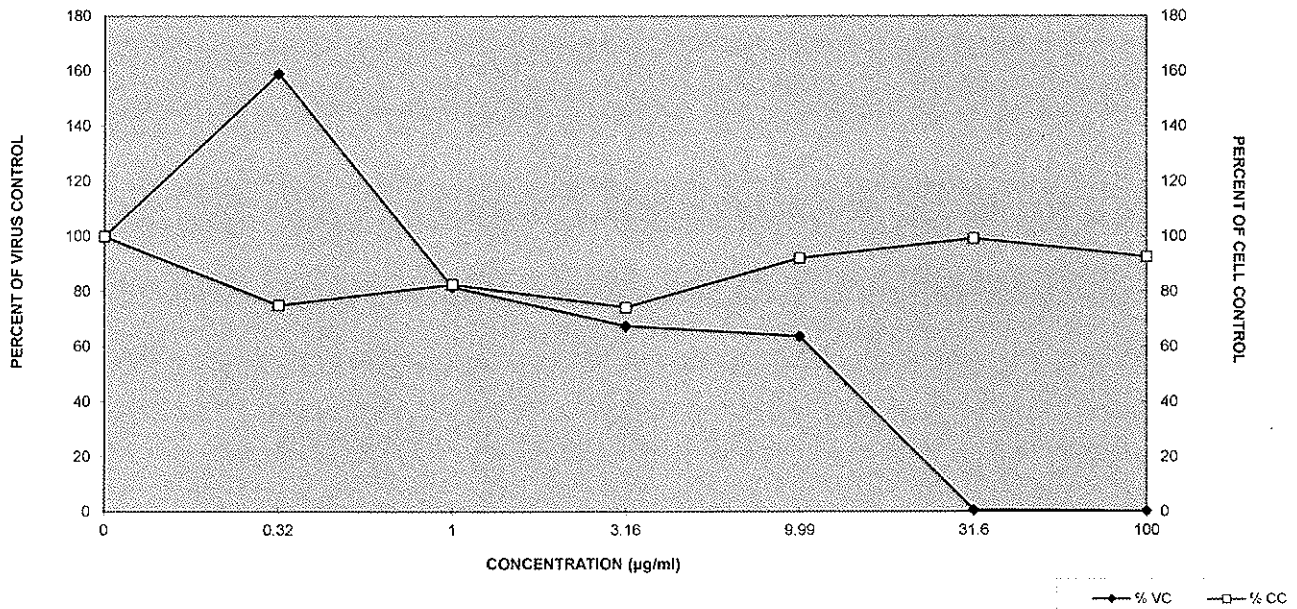
Virus:	HIV-1	Clade:	B	Technician:	Lu Yang	Setup Date:	6/3/13
Strain:	Ba _L	Cells:	Monocytes/Macrophages	PI:	Tracy Hartman	Read Date:	6/10/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: FPA

	25%	50%	95%
EC (µg/ml)	1.72	12.9	29.2
TC (µg/ml)	2.85	>100	>100
Therapeutic Index (TI)	1.66	>7.75	>3.42

Conc (µg/ml)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	3079.4	478.31517	100.00	1.114	0.10792971	100.00
0.32	4899.1	2063.7736	159.09	0.836	0.23467267	75.05
1	2515.5	781.90682	81.69	0.921	0.18180226	82.61
3.16	2078.5	935.32394	67.50	0.828	0.30036215	74.25
9.99	1965.1	900.42237	63.81	1.027	0.18637038	92.17
31.6	20.0	16.748655	0.65	1.106	0.17416771	99.27
100	7.9	13.639212	0.26	1.033	0.08723835	92.64

INHIBITION OF CCR5 TROPIC CLADE B HIV-1_{Ba_L} IN Monocytes/Macrophages BY FPA



INHIBITION OF CCR5 TROPIC CLADE B HIV-1_{Ba_L} IN Monocytes/Macrophages BY RITONAVIR

Raw Data (RITONAVIR)

p24 (pg/ml)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2666.0	7443.7	4270.6	5028.2	2602.1	184.7	115.6
SAMPLE 2	2968.8	5550.8	3419.9	3802.3	1039.6	170.4	94.4
SAMPLE 3	3603.3	5264.5	4199.9	2901.8	535.0	488.6	119.5

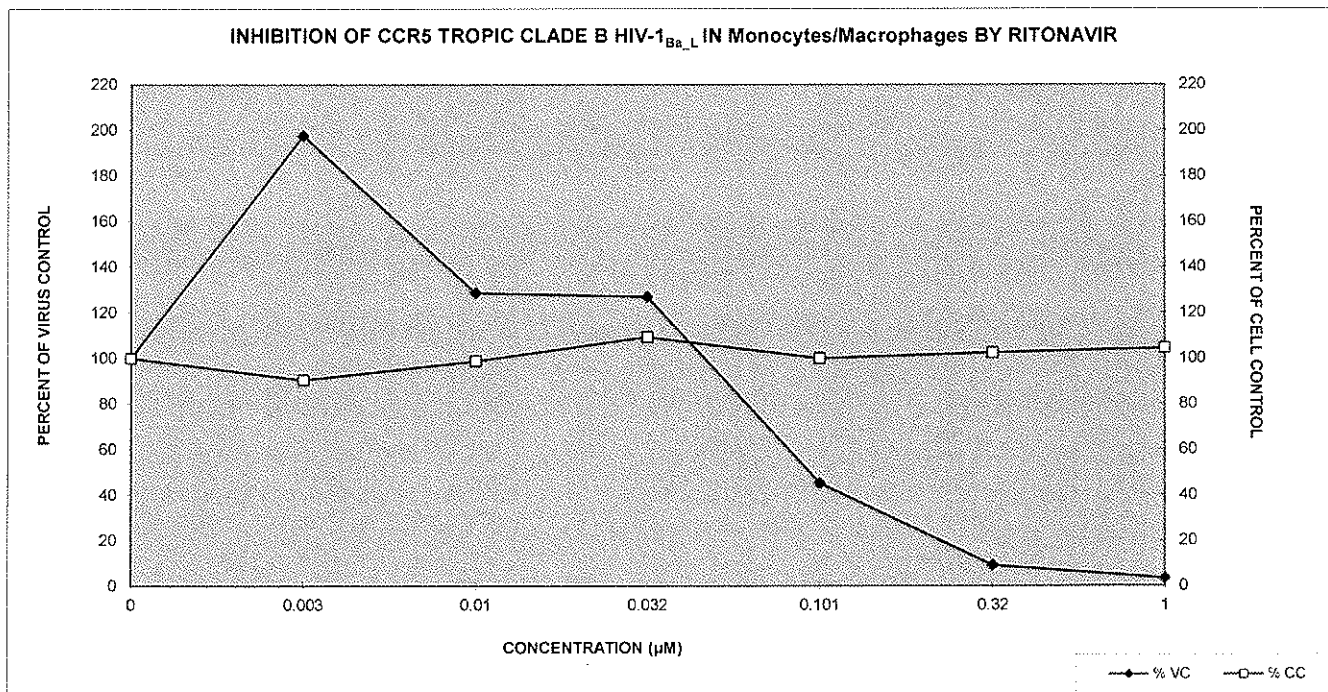
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	1.2384	1.0084	0.9905	1.1492	1.0513	1.2070	1.1693
SAMPLE 2	1.0407	0.9923	1.1361	1.2664	1.2057	1.0666	1.3050
SAMPLE 3	1.0645	1.0219	1.1751	1.2380	1.0843	1.1505	1.0187

Virus: HIV-1 Clade: B Technician: Lu Yang Setup Date: 6/3/13
 Strain: Ba_L Cells: ytes/Macrophages PI: Tracy Hartman Read Date: 6/10/13
 Tropism: CCR5 Project #: 306-01-01 Client: CISC

Antiviral Compound: RITONAVIR

	25%	50%	95%
EC (µM)	0.0665	0.0944	0.746
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>15.04	>10.59	>1.34

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	3079.4	478.315166	100.00	1.114	0.10793	100.00
0.003	6086.3	1184.23747	197.65	1.008	0.014819	90.40
0.01	3963.4	472.081155	128.71	1.101	0.097295	98.75
0.032	3910.8	1067.35322	127.00	1.218	0.061139	109.28
0.101	1392.2	1077.74908	45.21	1.114	0.081308	99.94
0.32	281.2	179.710968	9.13	1.141	0.070644	102.41
1	109.8	13.5392775	3.57	1.164	0.143215	104.47



INHIBITION OF CCR5 TROPIC CLADE B HIV-1_{Ba_L} IN Monocytes/Macrophages BY AZT

Raw Data (AZT)

p24 (pg/ml)							
Conc (µM)	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	2666.0	273.3	564.0	70.9	91.6	0.0	7.1
SAMPLE 2	2968.8	2776.8	12.4	8.0	0.0	1.8	0.0
SAMPLE 3	3603.3	490.5	94.9	45.2	0.0	39.8	0.0

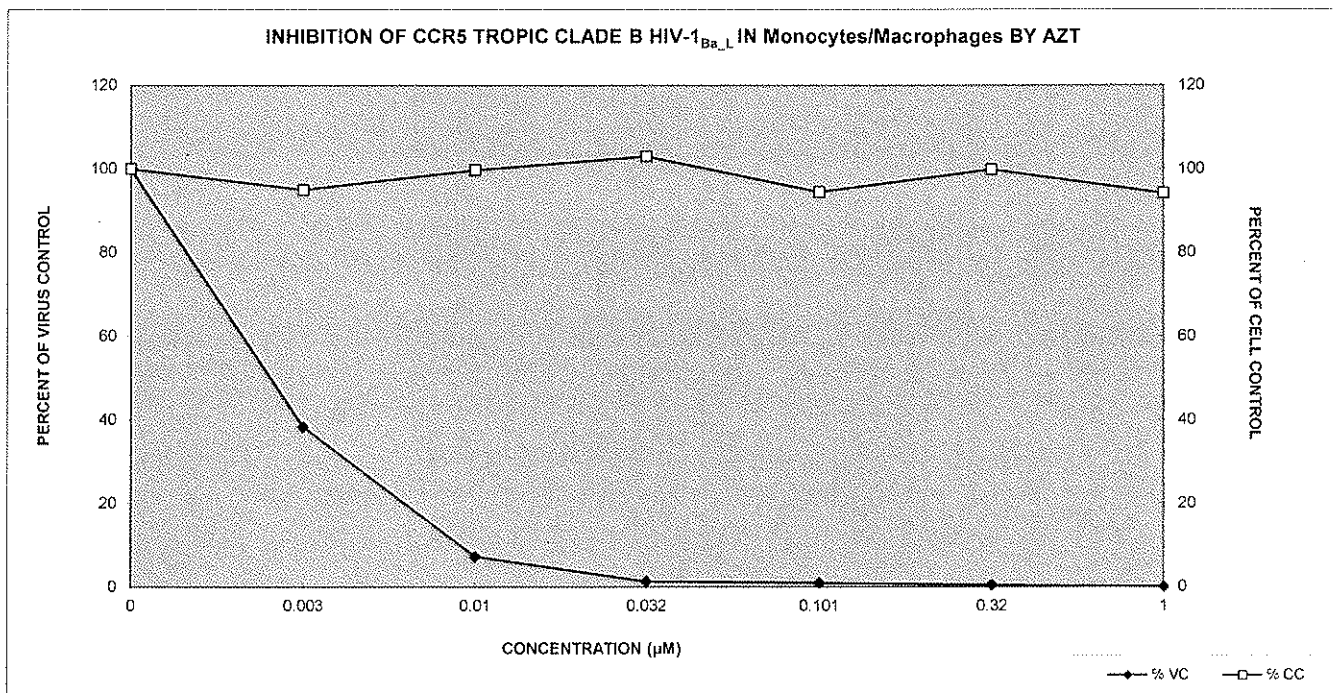
TOXICITY VALUES (XTT - O. D. @ 450/650 nm)							
SAMPLE 1	0	0.003	0.01	0.032	0.101	0.32	1
SAMPLE 1	1.2384	1.0395	1.1313	1.2644	1.1125	1.0042	0.9348
SAMPLE 2	1.0407	1.0603	1.0866	1.1272	0.9556	1.0907	1.1823
SAMPLE 3	1.0645	1.0767	1.1159	1.0515	1.0897	1.2429	1.0318

Virus:	HIV-1	Clade:	B	Technician:	Lu Yang	Setup Date:	6/3/13
Strain:	Ba_L	Cells:	ytes/Macrophages	PI:	Tracy Hartman	Read Date:	6/10/13
Tropism:	CCR5	Project #:	306-01-01	Client:	CJSC		

Antiviral Compound: AZT

	25%	50%	95%
EC (µM)	<0.00300	<0.00300	0.0156
TC (µM)	>1.0	>1.0	>1.0
Therapeutic Index (TI)	>333.33	>333.33	>64.10

Conc (µM)	Antiviral Test Values			Cytotoxicity Test Values		
	Mean RLU	St. Dev.	% Virus Control	Mean OD @ 450/650 nm	St. Dev.	% Cell Viability
0	3079.4	478.315166	100.00	1.114	0.10793	100.00
0.003	1180.2	1386.98483	38.33	1.059	0.018643	95.01
0.01	223.8	297.526945	7.27	1.111	0.022707	99.71
0.032	41.3	31.6253961	1.34	1.148	0.10792	102.98
0.101	30.5	52.862035	0.99	1.053	0.084774	94.45
0.32	13.9	22.4948108	0.45	1.113	0.120848	99.83
1	2.4	4.11597525	0.08	1.050	0.12471	94.18



APPENDIX III

Cross Resistance Results

In Vitro Antiviral Results For AZT

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

AZT (µM)
0.0003
0.001
0.003
0.01
0.03
0.1

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Cell Control	Toxicity Drug 2
	Virus Control	Drug 1			Drug 2	Virus Control	
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data: AZT (µM)

0.203	0.160	0.206	0.157	0.162	0.151	0.064	0.061	0.068	0.060	0.071	0.060
2.094	2.132	0.622	0.461	0.680	2.174					2.074	
2.046	1.918	1.231	0.971	0.870	1.913					1.984	
1.984	1.801	1.669	1.288	1.328	1.735					1.955	
1.950	0.686	1.476	1.750	1.186	2.020					0.617	
1.946	0.569	1.752	1.751	1.581	1.863					0.416	
2.238	0.485	2.034	1.880	1.995	1.853					0.569	
0.168	0.132	0.158	0.158	0.157	0.159						

Virus: HIV-1
Strain: IIIIB
Cells: CEM-SS

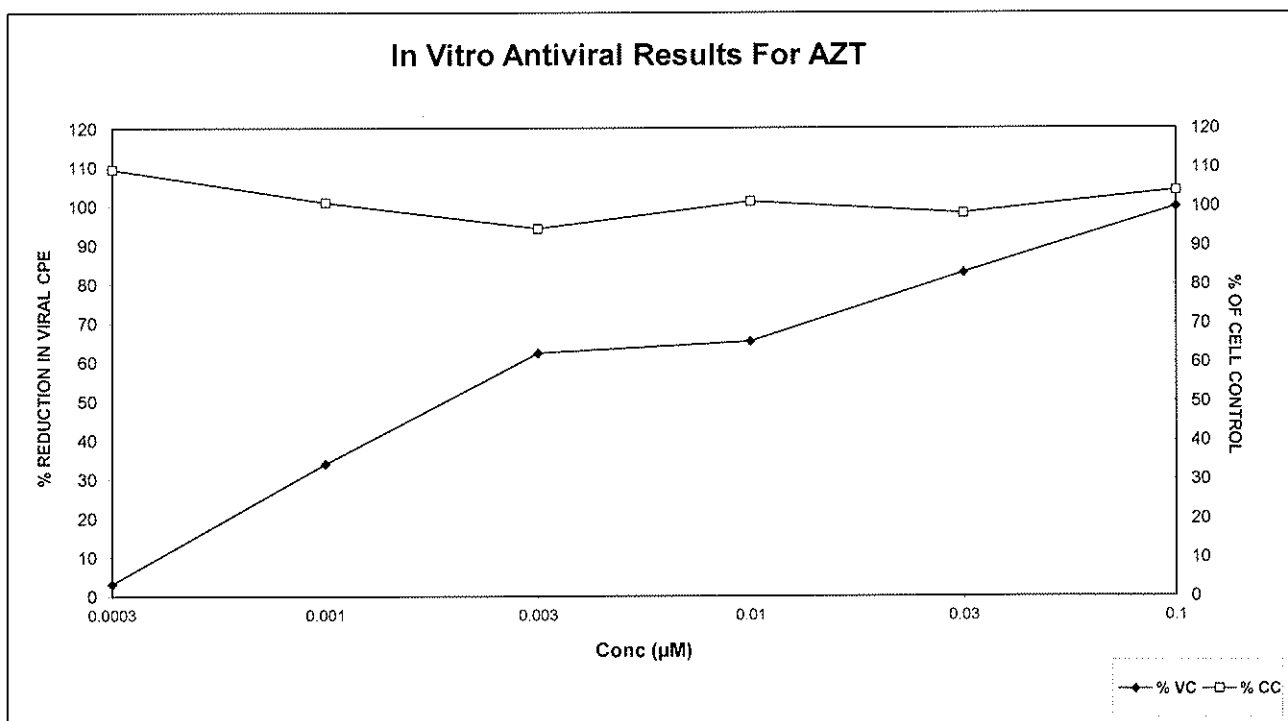
Test Date: 05/24/2013
Date Read: 05/30/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.173
Virus Control: 0.384
Cell Control: 1.804
Differential: 1.420

AZT	25%	50%	95%
TC (µM)	> 0.1	> 0.1	> 0.1
EC (µM)	0.0007	0.002	0.07
Therapeutic Index (TI)	> 143	> 50	> 1.43

AZT Conc (µM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.0003	0.045	3.17	1.976	110	-0.015
0.001	0.483	34.00	1.822	101	-0.016
0.003	0.886	62.38	1.701	94	-0.015
0.01	0.929	65.37	1.827	101	-0.015
0.03	1.179	82.99	1.773	98	-0.041
0.1	1.419	99.87	1.878	104	-0.006



In Vitro Antiviral Results For Ritonavir

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Ritonavir μM
 0.003
 0.01
 0.03
 0.1
 0.32
 1

Media Control				Plastic Control				
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Cell Control	Toxicity Drug 2	
	Virus Control	Drug 1			Drug 2			Virus Control
		High			High			
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)				

Raw Data Ritonavir (μM)

0.203	0.160	0.206	0.157	0.162	0.151	0.064	0.061	0.068	0.060	0.071	0.060
	2.132					1.989	0.363	0.428	0.603	2.074	2.040
	1.918					1.794	0.518	0.434	0.483	1.984	2.003
	1.801					1.642	0.530	0.544	0.555	1.955	2.066
	0.686					1.744	0.649	0.684	0.454	0.617	2.056
	0.569					1.804	1.628	1.624	1.557	0.416	1.975
	0.485					1.912	1.721	1.198	1.808	0.569	1.998
						0.158	0.159	0.157	0.155	0.157	0.169

Virus: HIV-1
 Strain: IIIB
 Cells: CEM-SS

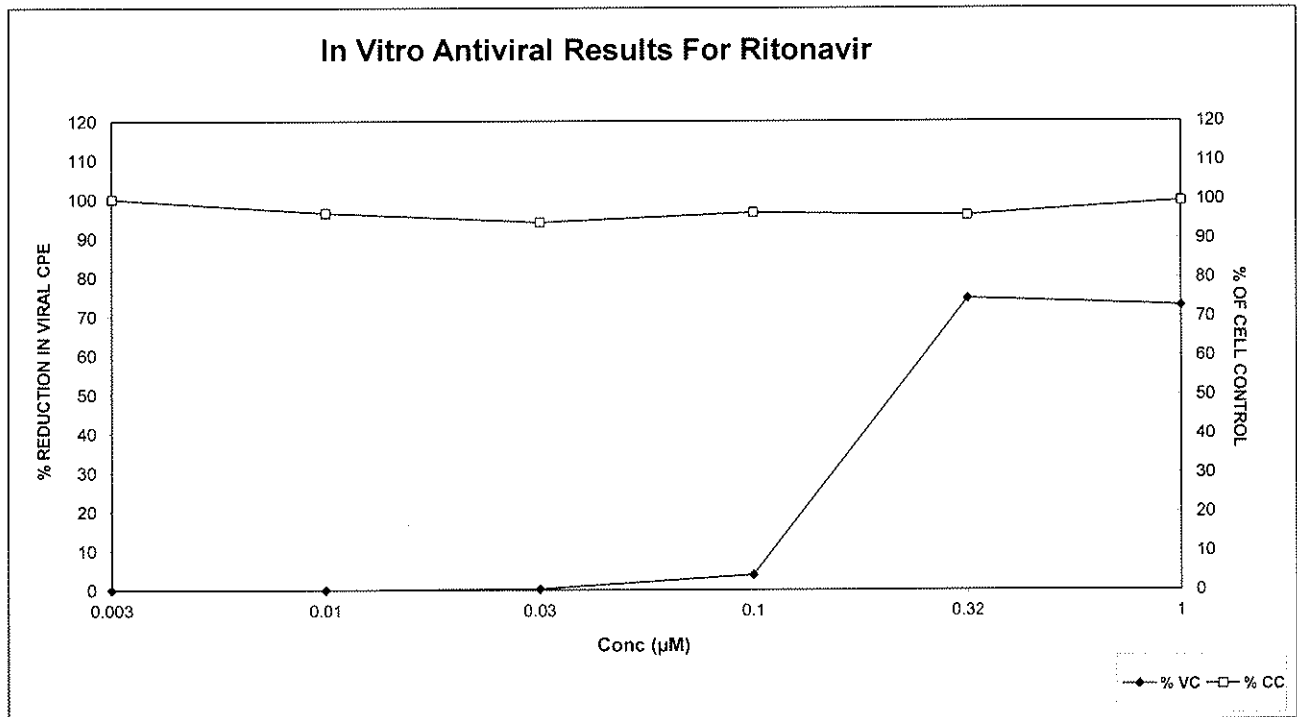
Test Date: 05/24/2013
 Date Read: 05/30/2013
 Operator: TLH

Sponsor: CJSC Intelpharm
 Principal Investigator: Hartman
 Project #: 306-01-01

Reagent: 0.173
 Virus Control: 0.384
 Cell Control: 1.804
 Differential: 1.420

Ritonavir	25%	50%	95%
TC (μM)	> 1	> 1	> 1
EC (μM)	0.14	0.21	> 1
Therapeutic Index (TI)	> 7.14	> 4.76	----

Ritonavir Conc (μM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.003	-0.088	0.00	1.846	100	-0.005
0.01	-0.063	0.00	1.741	97	-0.016
0.03	0.004	0.30	1.699	94	-0.018
0.1	0.055	3.84	1.743	97	-0.016
0.32	1.060	74.63	1.730	96	-0.014
1	1.034	72.78	1.797	100	-0.015



XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint:	XTT	Test Set-Up Date:	05/24/2013
Virus:	HIV-1	Date Plate Read:	5/30/2013
Strain:	IIIB	Technician:	TLH
Cells:	CEM-SS	PI:	Hartman
End Point Antiviral:	OD 450/650	Client:	C.JSC Intelparm
End Point Viability:	OD 450/650	Project #:	306-01-01

Number of Drugs:

Drug 1:
 Name: Fullerene
 High Conc: 100
 Conc Units: µg/ml
 Dilution Factor: Half-Log

Drug 2:
 Name:
 High Conc:
 Conc Units: µM
 Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
100
31.6
10
3.16
1
0.32

Concentration Verification

Conc. 1-6
0
0
0
0
0
0

Note: Discontinuous dilution series can be entered directly

Raw Data:

	0.179	0.138	0.166	0.164	0.136	0.131	0.062	0.059	0.060	0.060	0.057	0.068		
2.109	2.088	0.537	0.417	0.438	2.093	2.154	0.152	0.371	0.397	2.189	2.254			
2.132	2.003	0.527	0.435	1.084	2.079	1.885	0.524	0.310	0.457	2.107	2.156			
2.264	1.747	1.614	1.714	1.754	1.773	1.800	0.504	0.322	0.550	2.008	2.145			
2.217	0.399	2.018	1.946	1.924	2.040	1.819	0.373	0.428	0.476	0.306	2.145			
2.096	0.421	1.816	1.991	1.922	1.969	1.920	0.672	0.468	0.597	0.343	2.158			
1.992	0.535	1.843	1.860	1.873	1.793	2.052	0.520	0.497	0.437	0.567	2.280			
0.359	0.195	0.191	0.172	0.166	0.166	0.153	0.164	0.163	0.163	0.160	0.168			
CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT

In Vitro Antiviral Results For Fullerene

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration
Fullerene (µg/ml)
0.32
1
3.16
10
31.6
100

Media Control				Plastic Control				
Toxicity Drug 1	Cell Control	Low		Toxicity Drug 2	Low		Cell Control	
	Virus Control	Drug 1			Drug 2		Virus Control	Toxicity Drug 2
		High			High			
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)				

Raw Data: Fullerene (µg/ml)

0.179	0.138	0.166	0.164	0.136	0.131	0.062	0.059	0.060	0.060	0.057	0.068
2.109	2.088	0.537	0.417	0.438	2.093					2.189	
2.132	2.003	0.527	0.435	1.084	2.079					2.107	
2.264	1.747	1.614	1.714	1.754	1.773					2.008	
2.217	0.399	2.018	1.946	1.924	2.040					0.306	
2.096	0.421	1.816	1.991	1.922	1.969					0.343	
1.992	0.535	1.843	1.860	1.873	1.793					0.567	
0.359	0.195	0.191	0.172	0.166	0.166						

Virus: HIV-1
Strain: IIIB
Cells: CEM-SS

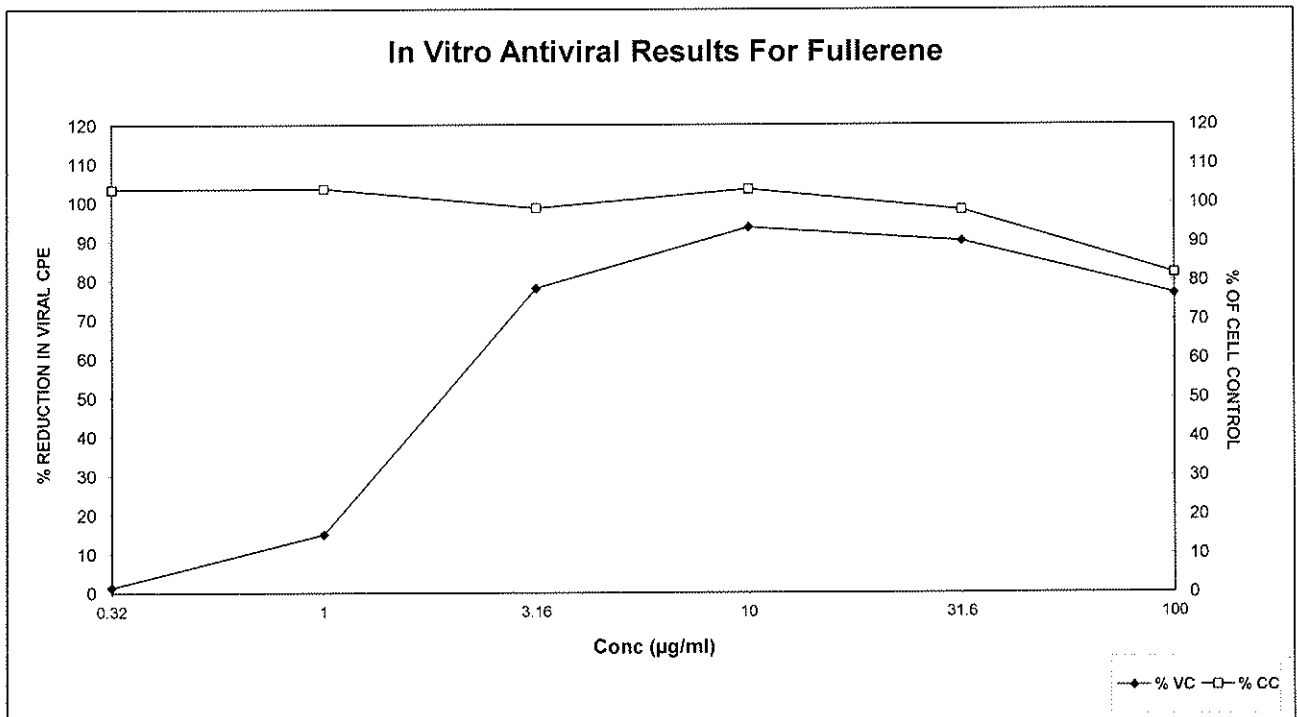
Test Date: 05/24/2013
Date Read: 05/30/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.152
Virus Control: 0.276
Cell Control: 1.871
Differential: 1.595

Fullerene	25%	50%	95%
TC (µg/ml)	> 100	> 100	> 100
EC (µg/ml)	1.2	1.89	> 100
Therapeutic Index (TI)	> 83.3	> 52.9	-----

Fullerene Conc (µg/ml)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.32	0.023	1.41	1.935	103	0.013
1	0.240	15.05	1.940	104	0.013
3.16	1.246	78.11	1.846	99	0.020
10	1.495	93.75	1.937	104	0.039
31.6	1.439	90.20	1.837	98	0.042
100	1.224	76.72	1.533	82	0.207



TLH



XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint: XTT	Test Set-Up Date: 05/30/2013
Virus: HIV-1	Date Plate Read: 6/6/2013
Strain: NL43	Technician: TLH
Cells: MT4	PI: Hartman
End Point Antiviral: OD 450/650	Client: CJSC Intelpharm
End Point Viability: OD 450/650	Project #: 306-01-01

Number of Drugs:

Drug 1:	Drug 2:
Name: AZT	Name: Ritonavir
High Conc: 0.1	High Conc: 1
Conc Units: μ M	Conc Units: μ M
Dilution Factor: Half-Log	Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
 1
 0.32
 0.1
 0.03
 0.001
 0.0003

Concentration Verification

Conc. 1-6
 1
 0.32
 0.1
 0.03
 0.01
 0.003

Note: Discontinuous dilution series can be entered directly

Raw Data:

CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		
0.509	0.450	0.443	0.441	0.446	0.444	0.173	0.169	0.166	0.168	0.162	0.180
1.092	1.384	0.457	0.484	0.496	1.210	1.170	0.407	0.417	0.349	1.176	0.828
1.029	1.433	0.758	0.784	0.766	1.214	1.223	0.372	0.416	0.343	1.180	1.007
0.933	1.253	1.352	1.341	1.317	1.277	1.326	0.429	0.350	0.318	1.314	1.256
0.945	0.407	1.234	1.288	1.378	1.195	1.304	1.522	0.797	1.297	0.370	0.993
0.964	0.401	1.271	1.301	1.181	1.110	1.370	1.400	1.426	1.183	0.355	1.130
0.953	0.643	1.157	1.258	1.336	1.155	1.334	1.340	1.492	1.399	0.368	1.031
0.610	0.554	0.561	0.527	0.590	0.509	0.527	0.531	0.537	0.531	0.501	0.598

In Vitro Antiviral Results For AZT

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

AZT (µM)
0.0003
0.001
0.003
0.01
0.03
0.1

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low		Toxicity Drug 2	Low		Cell Control
	Virus Control	Drug 1			Drug 2		Virus Control
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data: AZT (µM)

0.509	0.450	0.443	0.441	0.446	0.444	0.173	0.169	0.166	0.168	0.162	0.180
1.092	1.384	0.457	0.484	0.496	1.210					1.176	
1.029	1.433	0.758	0.784	0.766	1.214					1.180	
0.933	1.253	1.352	1.341	1.317	1.277					1.314	
0.945	0.407	1.234	1.288	1.378	1.195					0.370	
0.964	0.401	1.271	1.301	1.181	1.110					0.355	
0.953	0.643	1.157	1.258	1.336	1.155					0.368	
0.610	0.554	0.561	0.527	0.590	0.509						

Virus: HIV-1
Strain: NL43
Cells: MT4

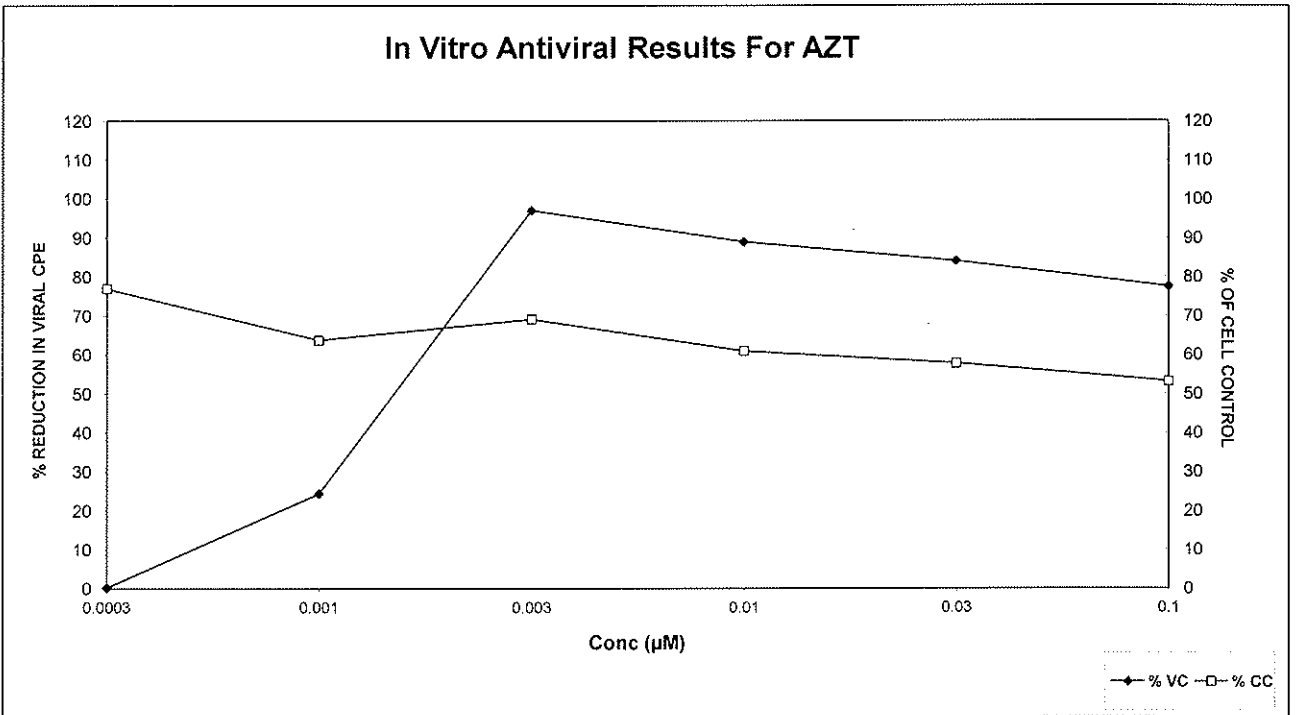
Test Date: 05/30/2013
Date Read: 06/06/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.456
Virus Control: -0.032
Cell Control: 0.834
Differential: 0.866

AZT	25%	50%	95%
TC (µM)	0.0004	> 0.1	> 0.1
EC (µM)	0.001	0.001	0.003
Therapeutic Index (TI)	< 1.00	> 100	> 33.3

AZT Conc (µM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.0003	0.002	0.24	0.643	77	0.053
0.001	0.211	24.41	0.532	64	0.134
0.003	0.841	97.09	0.577	69	0.072
0.01	0.771	89.03	0.509	61	0.105
0.03	0.728	84.11	0.483	58	0.099
0.1	0.672	77.58	0.444	53	0.155



In Vitro Antiviral Results For Ritonavir

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Ritonavir μM
 0.003
 0.01
 0.03
 0.1
 0.32
 1

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Cell Control	Toxicity Drug 2
	Virus Control	Drug 1			Drug 2		
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data Ritonavir (μM)

0.509	0.450	0.443	0.441	0.446	0.444	0.173	0.169	0.166	0.168	0.162	0.180
	1.384					1.170	0.407	0.417	0.349	1.176	0.828
	1.433					1.223	0.372	0.416	0.343	1.180	1.007
	1.253					1.326	0.429	0.350	0.318	1.314	1.256
	0.407					1.304	1.522	0.797	1.297	0.370	0.993
	0.401					1.370	1.400	1.426	1.183	0.355	1.130
	0.643					1.334	1.340	1.492	1.399	0.368	1.031
						0.527	0.531	0.537	0.531	0.501	0.598

Virus: HIV-1
 Strain: NL43
 Cells: MT4

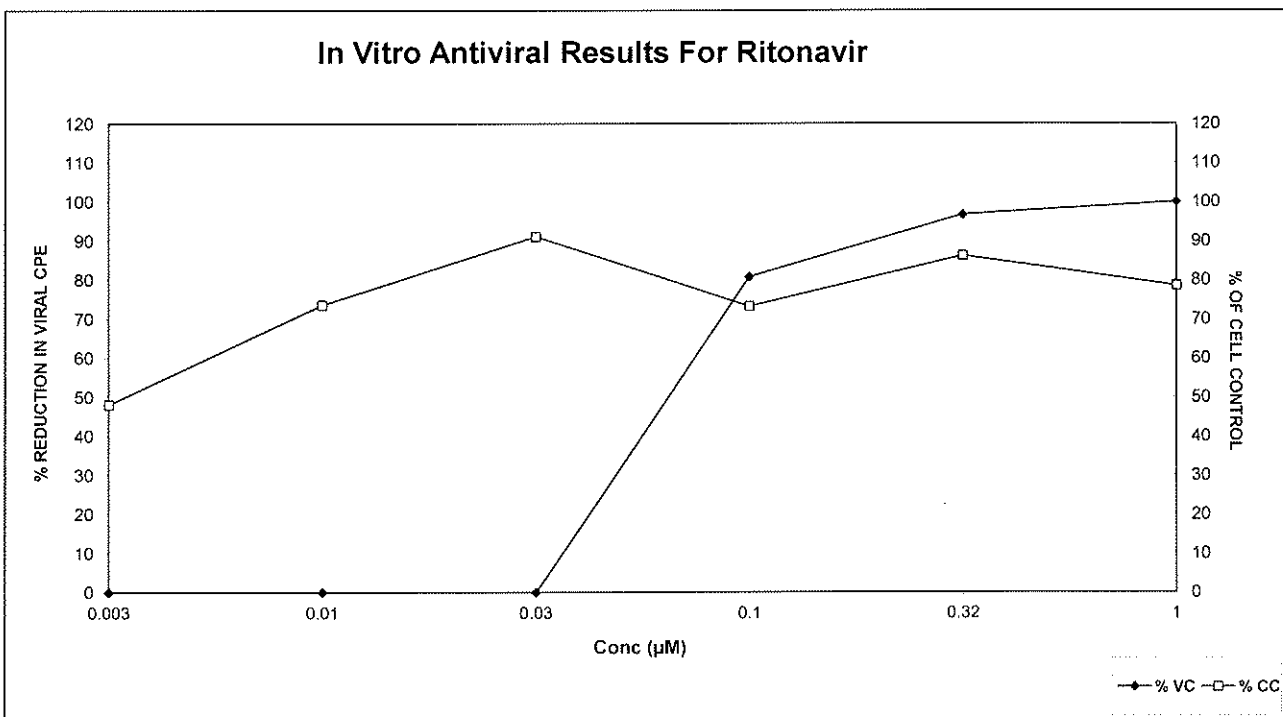
Test Date: 05/30/2013
 Date Read: 06/06/2013
 Operator: TLH

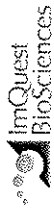
Sponsor: CJSC Intelpharm
 Principal Investigator: Hartman
 Project #: 306-01-01

Reagent: 0.456
 Virus Control: -0.032
 Cell Control: 0.834
 Differential: 0.866

Ritonavir	25%	50%	95%
TC (μM)	0.09	> 1	> 1
EC (μM)	0.04	0.06	0.28
Therapeutic Index (TI)	2.25	> 16.7	> 3.57

Ritonavir Conc (μM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. in Viral CPE	Mean OD 450/650	% Cell Viability	
0.003	-0.176	0.00	0.401	48	0.143
0.01	-0.093	0.00	0.614	74	0.046
0.03	-0.134	0.00	0.760	91	0.076
0.1	0.700	80.80	0.611	73	0.081
0.32	0.837	96.65	0.719	86	0.075
1	0.915	100.00	0.655	79	0.071





XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint: XTT	Test Set-Up Date: 05/30/2013
Virus: HIV-1	Date Plate Read: 6/6/2013
Strain: NL43	Technician: TLH
Cells: MT4	Pi: Hartman
End Point Antiviral: OD 450/650	Client: CJSC Intelpharm
End Point Viability: OD 450/650	Project #: 306-01-01

Number of Drugs:

Drug 1:
 Name: 3TC
 High Conc: 10
 Conc Units: μ M
 Dilution Factor: Half-Log

Drug 2:
 Name:
 High Conc:
 Conc Units: μ M
 Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
10
3.16
1
0.32
0.1
0.03

Concentration Verification

Conc. 1-6
0
0
0
0
0
0

Note: Discontinuous dilution series can be entered directly

Raw Data:

CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		
0.566	0.480	0.524	0.533	0.561	0.549	0.213	0.218	0.260	0.236	0.300	0.224
0.823	1.285	0.580	0.570	0.567	1.154	1.085	1.054	1.109	1.151	1.073	1.099
0.853	1.258	1.185	1.178	1.139	1.314	1.330	1.341	1.358	1.439	1.338	1.125
0.884	1.164	1.436	1.414	1.268	1.307	1.473	1.414	1.376	1.468	1.396	1.118
0.992	0.358	1.344	1.243	1.194	1.335	1.448	1.447	1.456	1.516	0.318	1.101
0.942	0.336	1.483	1.477	1.370	1.329	1.410	1.375	1.429	1.384	0.317	1.118
1.139	0.351	1.477	1.353	1.465	1.437	1.345	1.205	1.352	1.211	0.303	1.085
0.534	0.449	0.399	0.456	0.402	0.430	0.439	0.416	0.422	0.408	0.405	0.480

In Vitro Antiviral Results For 3TC

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

3TC (µM)
0.03
0.1
0.32
1
3.16
10

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Cell Control	Toxicity Drug 2
	Virus Control	Drug 1			Drug 2		
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data: 3TC (µM)

0.566	0.480	0.524	0.533	0.561	0.549	0.213	0.218	0.260	0.236	0.300	0.224
0.823	1.285	0.580	0.570	0.567	1.154					1.073	
0.853	1.258	1.185	1.178	1.139	1.314					1.338	
0.884	1.164	1.436	1.414	1.268	1.307					1.396	
0.992	0.358	1.344	1.243	1.194	1.335					0.318	
0.942	0.336	1.483	1.477	1.370	1.329					0.317	
1.139	0.351	1.477	1.353	1.465	1.437					0.303	
0.534	0.449	0.399	0.456	0.402	0.430						

Virus: HIV-1
Strain: NL43
Cells: MT4

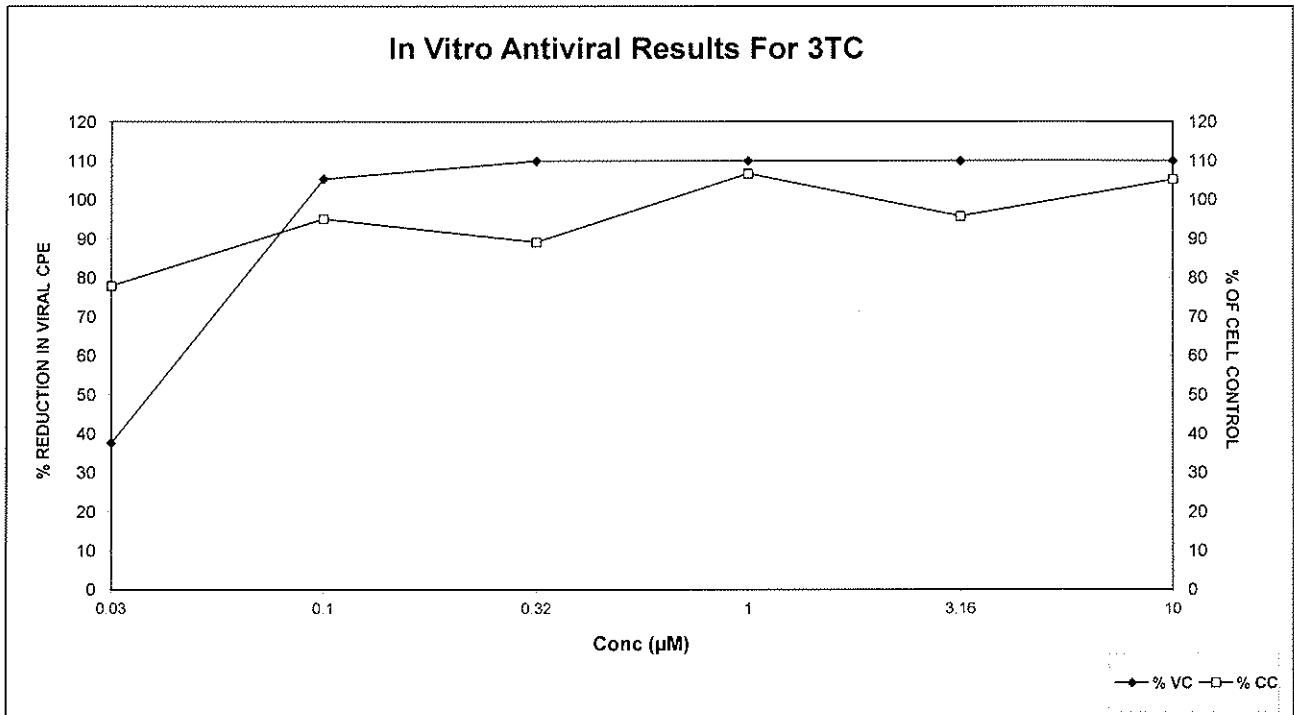
Test Date: 05/30/2013
Date Read: 06/06/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.536
Virus Control: -0.205
Cell Control: 0.717
Differential: 0.922

3TC	25%	50%	95%
TC (µM)	> 10	> 10	> 10
EC (µM)	< 0.03	0.04	0.08
Therapeutic Index (TI)	> 333	> 250	> 125

3TC Conc (µM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.03	0.347	37.69	0.559	78	-0.106
0.1	0.971	105.36	0.682	95	-0.134
0.32	1.122	110.00	0.639	89	-0.080
1	1.067	110.00	0.765	107	-0.137
3.16	1.199	110.00	0.686	96	-0.086
10	1.103	110.00	0.754	105	-0.002



XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint: XTT	Test Set-Up Date: 05/30/2013
Virus: HIV-1	Date Plate Read: 6/6/2013
Strain: NL43	Technician: TLH
Cells: MT4	Pi: Hartman
End Point Antiviral: OD 450/650	Client: CJSC Intelpharm
End Point Viability: OD 450/650	Project #: 306-01-01

Number of Drugs:

Drug 1:
 Name: Fullerene
 High Conc: 100
 Conc Units: µg/ml
 Dilution Factor: Half-Log

Drug 2:
 Name: Efavirenz
 High Conc: 0.1
 Conc Units: µM
 Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
 100
 31.6
 10
 3.16
 1
 0.32

Concentration Verification

Conc. 1-6
 0.1
 0.03
 0.01
 0.003
 0.001
 0.0003

Note: Discontinuous dilution series can be entered directly

Raw Data:

CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		
0.522	0.449	0.462	0.456	0.460	0.469	0.174	0.179	0.175	0.166	0.171	0.189
1.173	1.268	0.465	0.418	0.458	1.284	1.093	0.440	0.427	0.401	0.991	0.978
1.158	1.301	1.405	1.354	1.380	1.391	1.160	0.578	0.470	0.449	1.226	1.120
1.210	1.310	1.388	1.491	1.455	1.459	1.371	1.333	1.194	1.213	1.217	0.984
1.114	0.365	1.508	1.601	1.633	1.581	1.338	1.480	1.429	1.306	0.309	0.961
0.896	0.343	1.160	1.080	1.163	1.338	1.265	1.339	1.504	1.391	0.316	1.004
2.264	0.345	1.849	1.992	1.925	2.070	1.313	1.382	1.240	1.480	0.316	1.132
0.848	0.653	0.595	0.518	0.528	0.520	0.534	0.520	0.515	0.481	0.463	0.559

In Vitro Antiviral Results For Fullerene

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Fullerene (µg/ml)
0.32
1
3.16
10
31.6
100

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Cell Control	Toxicity Drug 2
	Virus Control	Drug 1			Drug 2	Virus Control	
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data: Fullerene (µg/ml)

0.522	0.449	0.462	0.456	0.460	0.469	0.174	0.179	0.175	0.166	0.171	0.189
1.173	1.268	0.465	0.418	0.458	1.284					0.991	
1.158	1.301	1.405	1.354	1.380	1.391					1.226	
1.210	1.310	1.388	1.491	1.455	1.459					1.217	
1.114	0.365	1.508	1.601	1.633	1.581					0.309	
0.896	0.343	1.160	1.080	1.163	1.338					0.316	
2.264	0.345	1.849	1.992	1.925	2.070					0.316	
0.848	0.653	0.595	0.518	0.528	0.520						

Virus: HIV-1
Strain: NL43
Cells: MT4

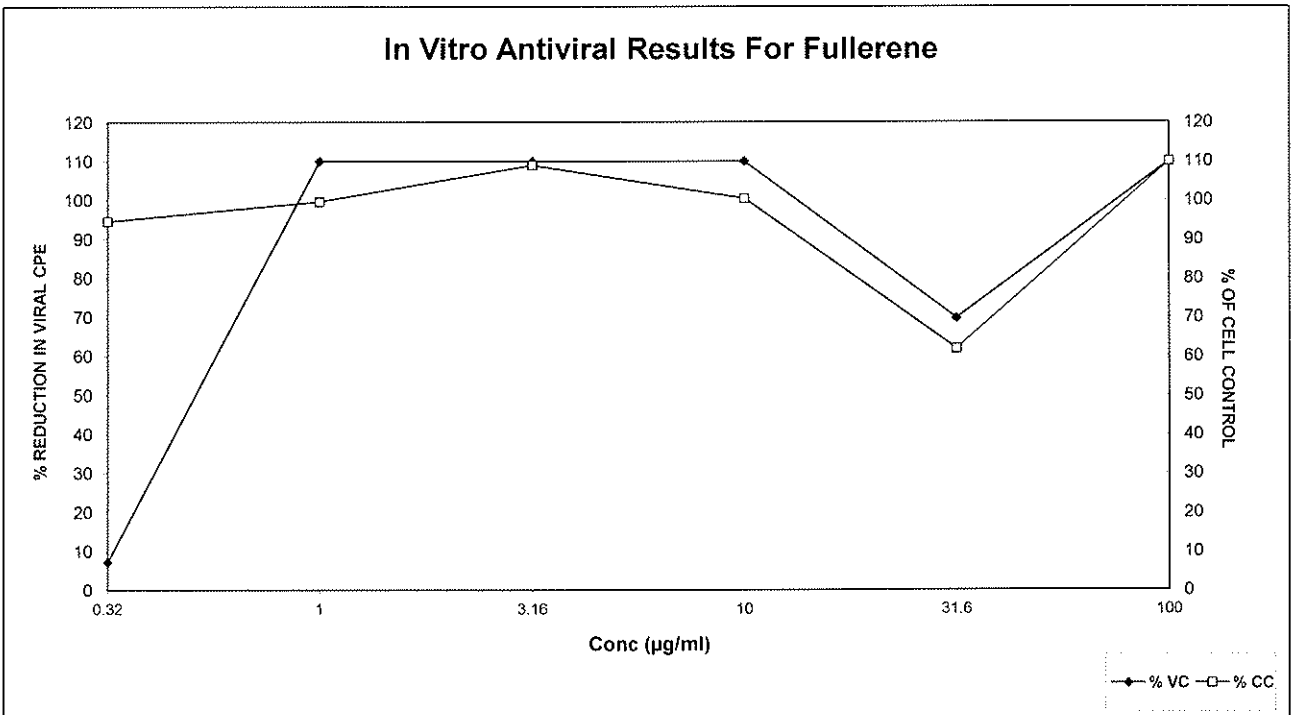
Test Date: 05/30/2013
Date Read: 06/06/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.470
Virus Control: -0.137
Cell Control: 0.749
Differential: 0.887

Fullerene	25%	50%	95%
TC (µg/ml)	21.4	> 100	> 100
EC (µg/ml)	0.39	0.51	0.85
Therapeutic Index (TI)	54.9	> 196	> 118

Fullerene Conc (µg/ml)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.32	0.064	7.23	0.708	95	0.051
1	0.988	110.00	0.747	100	0.059
3.16	1.065	110.00	0.817	109	0.048
10	1.123	110.00	0.753	100	0.126
31.6	0.619	69.80	0.464	62	0.183
100	1.211	110.00	1.318	110	0.379



In Vitro Antiviral Results For Efavirenz

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Efavirenz μM
 0.0003
 0.001
 0.003
 0.01
 0.03
 0.1

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Cell Control	Toxicity Drug 2
	Virus Control	Drug 1			Drug 2	Virus Control	
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data Efavirenz (μM)

0.522	0.449	0.462	0.456	0.460	0.469	0.174	0.179	0.175	0.166	0.171	0.189
	1.268					1.093	0.440	0.427	0.401	0.991	0.978
	1.301					1.160	0.578	0.470	0.449	1.226	1.120
	1.310					1.371	1.333	1.194	1.213	1.217	0.984
	0.365					1.338	1.480	1.429	1.306	0.309	0.961
	0.343					1.265	1.339	1.504	1.391	0.316	1.004
	0.345					1.313	1.382	1.240	1.480	0.316	1.132
						0.534	0.520	0.515	0.481	0.463	0.559

Virus: HIV-1
 Strain: NL43
 Cells: MT4

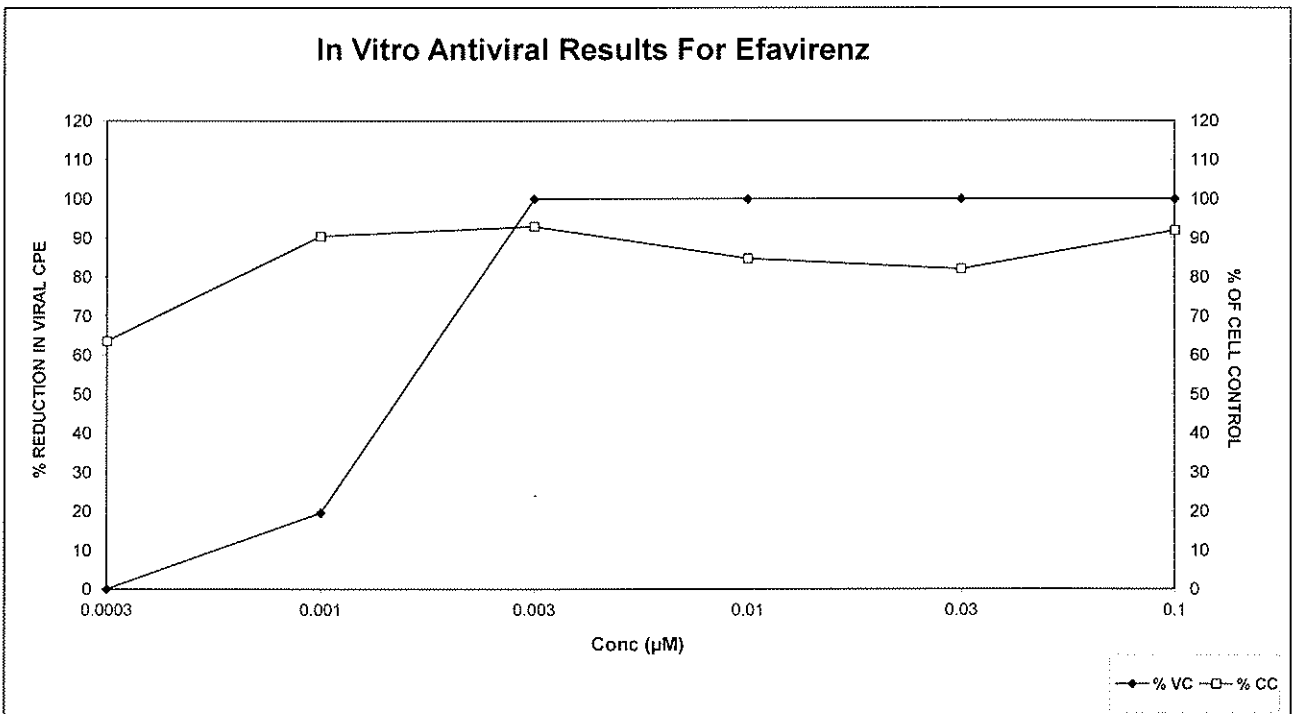
Test Date: 05/30/2013
 Date Read: 06/06/2013
 Operator: TLH

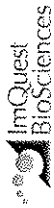
Sponsor: CJSC Intelpharm
 Principal Investigator: Hartman
 Project #: 306-01-01

Reagent: 0.470
 Virus Control: -0.137
 Cell Control: 0.749
 Differential: 0.887

Efavirenz	25%	50%	95%
TC (μM)	> 0.1	> 0.1	> 0.1
EC (μM)	0.001	0.002	0.003
Therapeutic Index (TI)	> 100	> 50	> 33.3

Efavirenz Conc (μM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.0003	0.000	0.05	0.476	64	0.090
0.001	0.174	19.57	0.677	90	-0.007
0.003	0.903	100.00	0.696	93	0.011
0.01	1.028	100.00	0.635	85	0.045
0.03	1.029	100.00	0.615	82	0.050
0.1	0.971	100.00	0.689	92	0.064





XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint: XTT	Test Set-Up Date: 05/30/2013
Virus: HIV-1	Date Plate Read: 6/6/2013
Strain: A17 (K103N/Y181C)	Technician: TLH
Cells: MT4	PI: Hartman
End Point Antiviral: OD 450/650	Client: C.JSC Intelpharm
End Point Viability: OD 450/650	Project #: 306-01-01

Number of Drugs:

Drug 1:	Drug 2:
Name: AZT	Name: Ritonavir
High Conc: 0.1	High Conc: 1
Conc Units: μ M	Conc Units: μ M
Dilution Factor: Half-Log	Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
 1
 0.32
 0.01
 0.003
 0.001
 0.0003

Concentration Verification

Conc. 1-6
 1
 0.32
 0.1
 0.03
 0.01
 0.003

Note: Discontinuous dilution series can be entered directly

Raw Data:

CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		
0.539	0.509	0.521	0.519	0.578	0.623	0.332	0.223	0.368	0.225	0.156	0.240
1.063	1.264	0.562	0.476	0.291	0.987	0.678	0.430	0.455	0.536	0.914	0.652
1.127	1.383	1.191	1.033	0.740	1.147	1.286	0.540	0.457	0.432	1.210	1.063
1.074	1.116	1.203	1.176	1.188	1.256	1.421	0.495	0.589	0.626	0.754	0.894
0.941	0.401	1.223	1.133	0.930	1.019	1.234	0.545	0.892	0.784	0.681	0.630
0.994	0.376	1.162	0.815	0.806	0.982	1.377	1.126	0.845	1.038	0.640	1.249
1.040	0.365	0.772	0.866	1.009	1.135	1.200	1.095	1.176	1.257	0.661	1.112
0.353	0.524	0.486	0.305	0.381	0.505	0.491	0.523	0.541	0.618	0.516	0.551
CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		

In Vitro Antiviral Results For AZT

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

AZT (µM)
0.0003
0.001
0.003
0.01
0.03
0.1

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Cell Control	Toxicity Drug 2
	Virus Control	Drug 1			Drug 2	Virus Control	
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data: AZT (µM)

0.539	0.509	0.521	0.519	0.578	0.623	0.332	0.223	0.368	0.225	0.156	0.240
1.063	1.264	0.562	0.476	0.291	0.987					0.914	
1.127	1.383	1.191	1.033	0.740	1.147					1.210	
1.074	1.116	1.203	1.176	1.188	1.256					0.754	
0.941	0.401	1.223	1.133	0.930	1.019					0.681	
0.994	0.376	1.162	0.815	0.806	0.982					0.640	
1.040	0.365	0.772	0.866	1.009	1.135					0.661	
0.353	0.524	0.486	0.305	0.381	0.505						

Virus: HIV-1
Strain: A17 (K103N/Y181C)
Cells: MT4

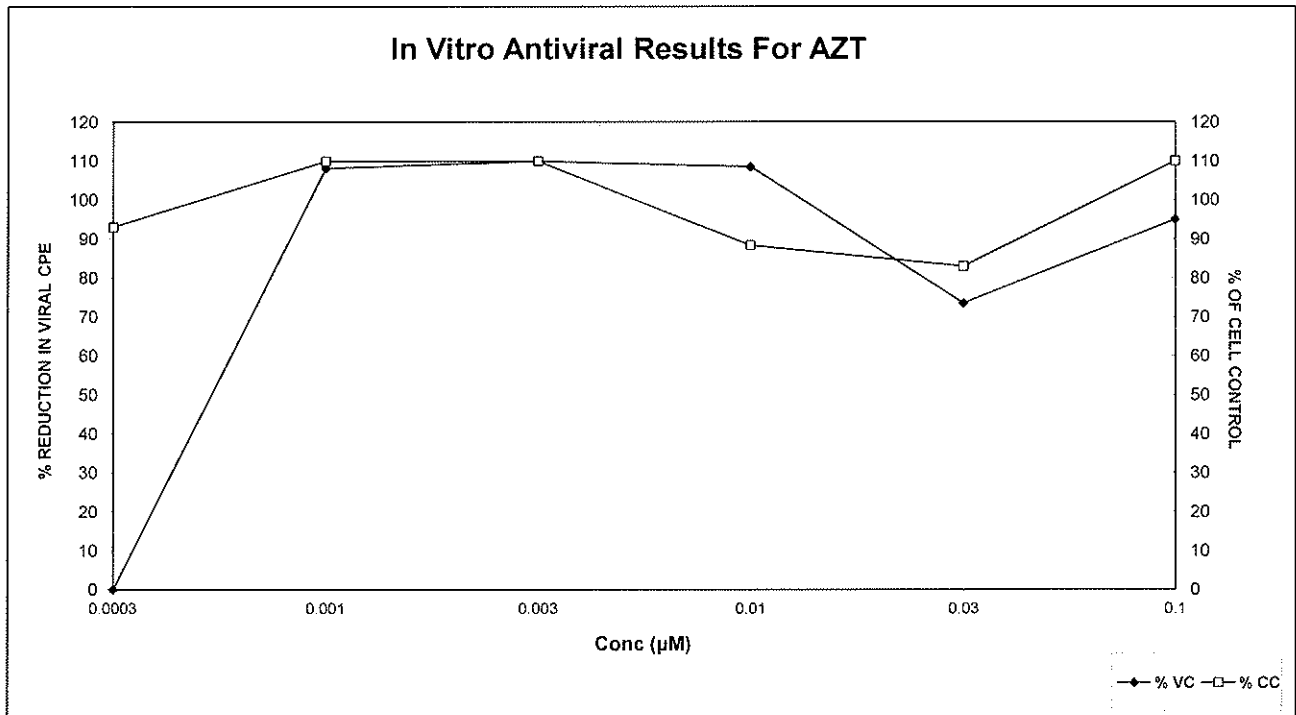
Test Date: 05/30/2013
Date Read: 06/06/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.548
Virus Control: -0.027
Cell Control: 0.559
Differential: 0.586

AZT	25%	50%	95%
TC (µM)	> 0.1	> 0.1	> 0.1
EC (µM)	0.0004	0.0005	0.0009
Therapeutic Index (TI)	> 250	> 200	> 111

AZT Conc (µM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.0003	-0.035	0.00	0.520	93	-0.043
0.001	0.634	108.19	0.756	110	-0.167
0.003	0.912	110.00	0.860	110	-0.243
0.01	0.636	108.55	0.494	88	-0.062
0.03	0.431	73.49	0.464	83	-0.024
0.1	0.557	94.99	0.735	110	-0.195



In Vitro Antiviral Results For Ritonavir

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration
Ritonavir μM
0.003
0.01
0.03
0.1
0.32
1

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Drug 1	Toxicity Drug 1	Toxicity Drug 2	Drug 2	Cell Control	Toxicity Drug 2
	Virus Control					Virus Control	
Low		Low		Low		Low	
High		High		High		High	
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data Ritonavir (μM)

0.539	0.509	0.521	0.519	0.578	0.623	0.332	0.223	0.368	0.225	0.156	0.240
	1.264					0.678	0.430	0.455	0.536	0.914	0.652
	1.383					1.286	0.540	0.457	0.432	1.210	1.063
	1.116					1.421	0.495	0.589	0.626	0.754	0.894
	0.401					1.234	0.545	0.892	0.784	0.681	0.630
	0.376					1.377	1.126	0.845	1.038	0.640	1.249
	0.365					1.200	1.095	1.176	1.257	0.661	1.112
						0.491	0.523	0.541	0.618	0.516	0.551

Virus: HIV-1
Strain: A17 (K103N/Y181C)
Cells: MT4

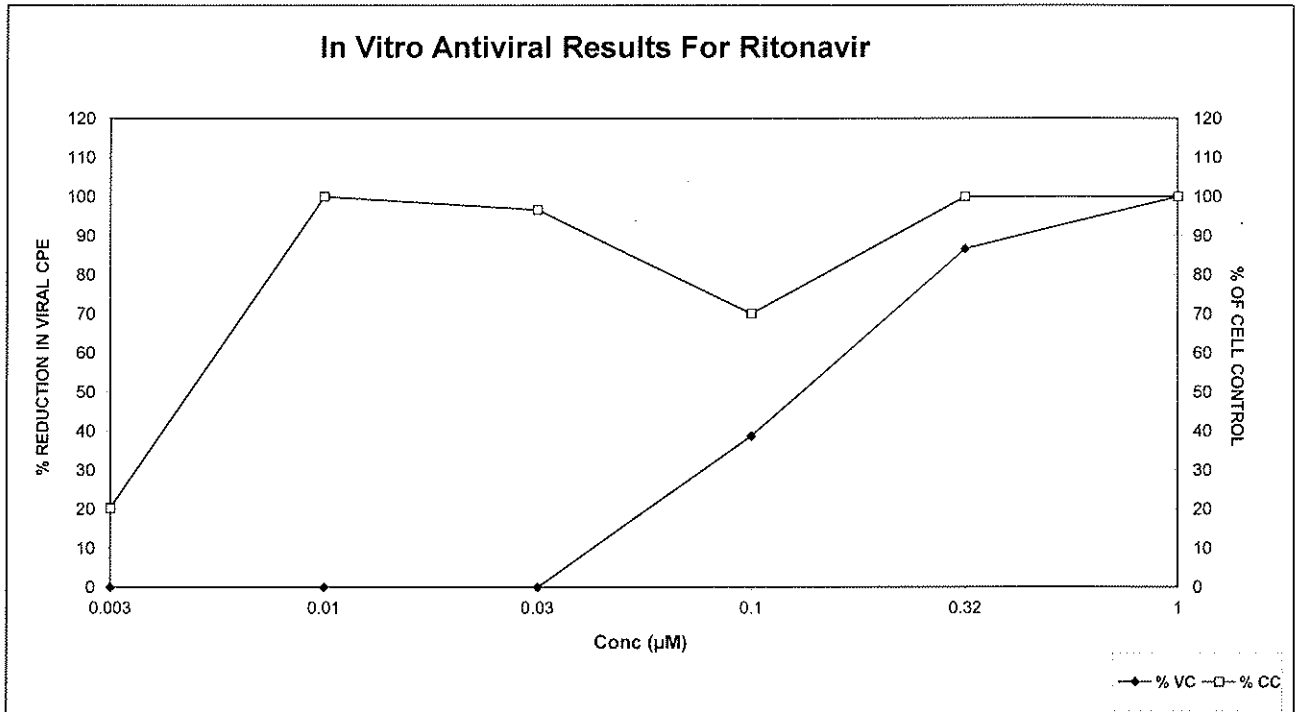
Test Date: 05/30/2013
Date Read: 06/06/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principal Investigator: Hartman
Project #: 306-01-01

Reagent: 0.548
Virus Control: -0.027
Cell Control: 0.559
Differential: 0.586

Ritonavir	25%	50%	95%
TC (μM)	0.08	> 1	> 1
EC (μM)	0.07	0.13	0.65
Therapeutic Index (TI)	1.14	> 7.69	> 1.54

Ritonavir Conc (μM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.003	-0.051	0.00	0.113	20	0.003
0.01	-0.012	0.00	0.659	100	-0.032
0.03	-0.021	0.00	0.540	97	0.070
0.1	0.227	38.77	0.391	70	-0.008
0.32	0.508	86.64	0.790	100	-0.025
1	0.713	100.00	0.665	100	-0.057





XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint: XTT Virus: HIV-1 Strain: A17 (K103N/Y181C) Cells: MT4 End Point Antiviral: OD 450/650 End Point Viability: OD 450/650	Test Set-Up Date: 05/30/2013 Date Plate Read: 6/6/2013 Technician: TLH PI: Hartman Client: CJSC Intelpharm Project #: 306-01-01
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Number of Drugs:

Drug 1:
Name: Fullerene
High Conc: 100
Conc Units: µg/ml
Dilution Factor: Half-Log

Drug 2:
Name: Efavirenz
High Conc: 1
Conc Units: µM
Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
 100
 31.6
 10
 3.16
 1
 0.32

Concentration Verification

Conc. 1-6
 1
 0.32
 0.1
 0.03
 0.01
 0.003

Note: Discontinuous dilution series can be entered directly

Raw Data:

CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		
0.543	0.486	0.490	0.488	0.494	0.508	0.188	0.189	0.189	0.185	0.175	0.187
1.257	1.269	0.641	0.302	0.439	1.436	1.169	0.361	0.409	0.359	1.164	0.923
1.295	1.258	1.290	1.373	1.372	1.454	1.268	0.381	0.384	0.339	1.255	0.952
1.326	1.498	1.421	1.543	1.522	1.754	1.482	0.396	0.413	0.411	1.318	1.075
1.388	0.261	1.289	1.494	1.461	1.563	1.385	0.851	0.775	0.620	0.332	1.031
1.031	0.232	1.114	1.178	1.124	1.359	1.402	1.036	1.025	0.952	0.267	0.864
2.481	0.403	2.357	2.349	2.036	1.935	1.286	1.281	1.279	1.217	0.387	0.987
0.724	0.485	0.364	0.428	0.397	0.475	0.440	0.272	0.330	0.356	0.440	0.474

In Vitro Antiviral Results For Fullerene

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Fullerene (µg/ml)
0.32
1
3.16
10
31.6
100

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low		Toxicity Drug 2	Low		Cell Control
	Virus Control	Drug 1			Drug 2		Virus Control
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data: Fullerene (µg/ml)

0.543	0.486	0.490	0.488	0.494	0.508	0.188	0.189	0.189	0.185	0.175	0.187
1.257	1.269	0.641	0.302	0.439	1.436					1.164	
1.295	1.258	1.290	1.373	1.372	1.454					1.255	
1.326	1.498	1.421	1.543	1.522	1.754					1.318	
1.388	0.261	1.289	1.494	1.461	1.563					0.332	
1.031	0.232	1.114	1.178	1.124	1.359					0.267	
2.481	0.403	2.357	2.349	2.036	1.935					0.367	
0.724	0.485	0.364	0.428	0.397	0.475						

Virus: HIV-1
Strain: A17 (K103N/Y181C)
Cells: MT4

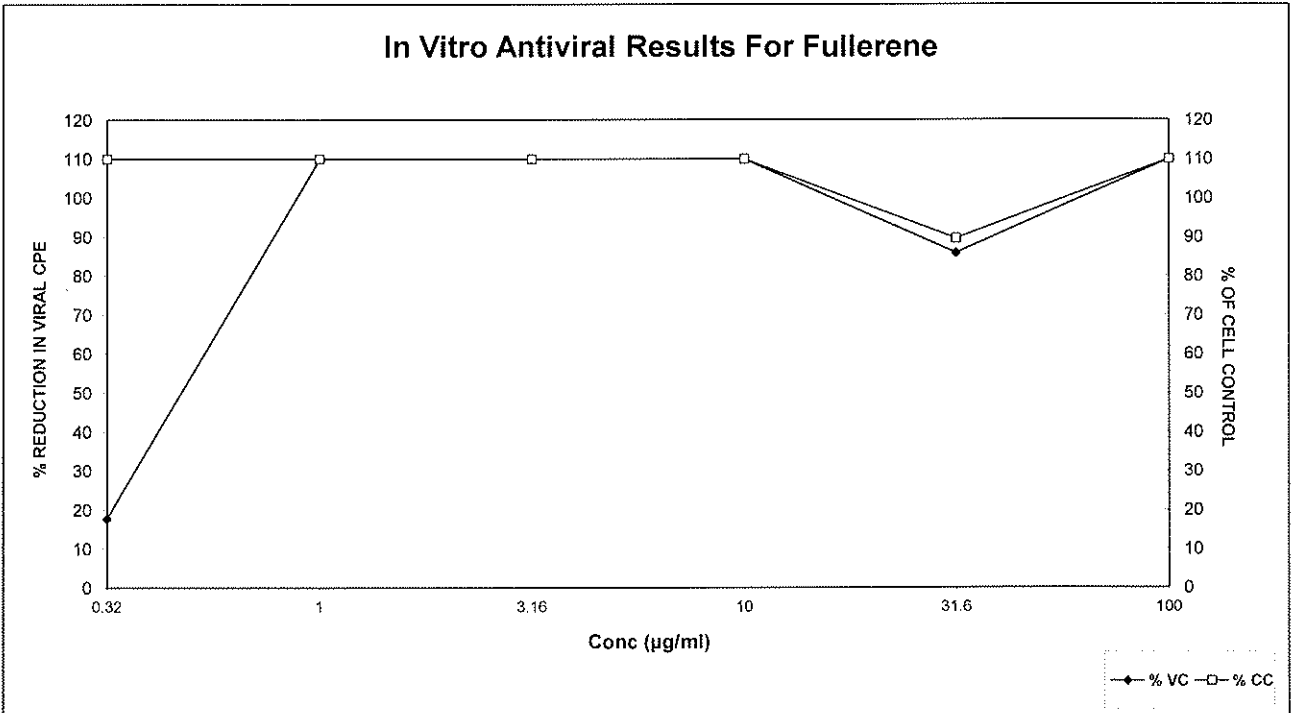
Test Date: 05/30/2013
Date Read: 06/06/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.502
Virus Control: -0.188
Cell Control: 0.792
Differential: 0.980

Fullerene	25%	50%	95%
TC (µg/ml)	> 100	> 100	> 100
EC (µg/ml)	0.36	0.48	0.83
Therapeutic Index (TI)	> 286	> 208	> 120

Fullerene Conc (µg/ml)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. in Viral CPE	Mean OD 450/650	% Cell Viability	
0.32	0.174	17.76	0.872	110	-0.027
1	1.136	110.00	0.978	110	-0.105
3.16	1.255	110.00	1.112	110	-0.074
10	1.238	110.00	1.112	110	-0.138
31.6	0.841	85.86	0.710	90	-0.016
100	1.711	110.00	1.484	110	0.223



In Vitro Antiviral Results For Efavirenz

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Efavirenz μM
 0.003
 0.01
 0.03
 0.1
 0.32
 1

Media Control				Plastic Control				
Toxicity Drug 1	Cell Control	Low		Toxicity Drug 2	Low		Cell Control	
	Virus Control	Drug 1			Drug 2		Virus Control	Toxicity Drug 2
		High			High			
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)				

Raw Data Efavirenz (μM)

0.543	0.486	0.490	0.488	0.494	0.508	0.188	0.189	0.189	0.185	0.175	0.187
	1.269					1.169	0.361	0.409	0.359	1.164	0.923
	1.258					1.268	0.381	0.384	0.339	1.255	0.952
	1.498					1.482	0.396	0.413	0.411	1.318	1.075
	0.261					1.385	0.851	0.775	0.620	0.332	1.031
	0.232					1.402	1.036	1.025	0.952	0.267	0.864
	0.403					1.286	1.281	1.279	1.217	0.387	0.987
						0.440	0.272	0.330	0.356	0.440	0.474

Virus: HIV-1
 Strain: A17 (K103N/Y181C)
 Cells: MT4

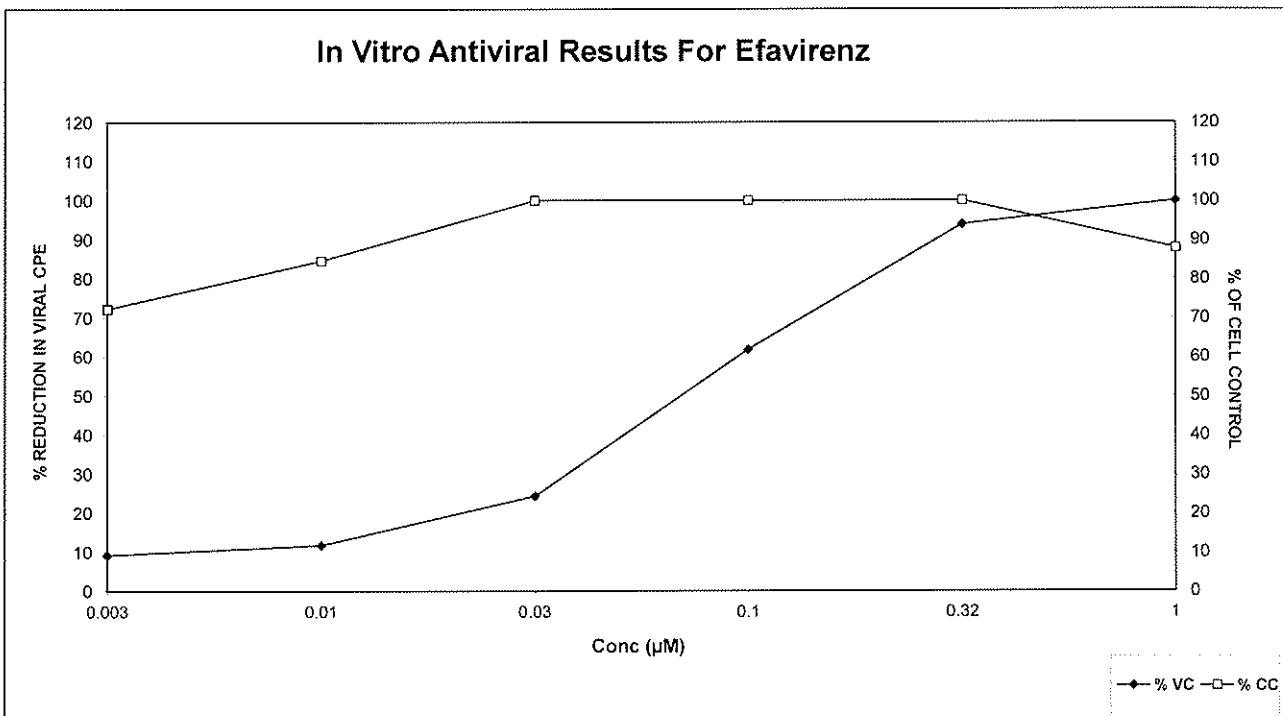
Test Date: 05/30/2013
 Date Read: 06/06/2013
 Operator: TLH

Sponsor: CJSC Intelpharm
 Principal Investigator: Hartman
 Project #: 306-01-01

Reagent: 0.502
 Virus Control: -0.188
 Cell Control: 0.792
 Differential: 0.980

Efavirenz	25%	50%	95%
TC (μM)	> 1	> 1	> 1
EC (μM)	0.03	0.07	0.39
Therapeutic Index (TI)	> 33.3	> 14.3	> 2.56

Efavirenz Conc (μM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.003	0.090	9.21	0.572	72	-0.028
0.01	0.115	11.78	0.670	85	-0.061
0.03	0.239	24.35	0.923	100	-0.146
0.1	0.606	61.88	0.878	100	-0.172
0.32	0.920	93.89	0.861	100	-0.229
1	1.007	100.00	0.696	88	-0.061



In Vitro Antiviral Results For AZT

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

AZT (µM)
0.0003
0.001
0.003
0.01
0.03
0.1

Media Control				Plastic Control				
Toxicity Drug 1	Cell Control	Low		Toxicity Drug 2	Low		Cell Control	
	Virus Control	Drug 1			Drug 2		Virus Control	Toxicity Drug 2
		High			High			
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)				

Raw Data: AZT (µM)

0.255	0.230	0.246	0.242	0.254	0.266	0.117	0.115	0.104	0.118	0.112	0.112
1.415	1.186	0.294	0.318	0.350	1.172					1.282	
1.270	1.098	1.057	1.086	1.171	1.137					1.377	
1.228	1.134	1.235	1.389	1.513	1.518					1.128	
1.106	0.362	1.081	1.338	1.404	1.357					0.287	
1.136	0.422	1.242	1.035	1.012	1.093					0.303	
1.098	0.328	1.179	1.161	1.200	1.158					0.329	
0.256	0.240	0.246	0.249	0.243	0.242						

Virus: HIV-1
Strain: M184V
Cells: MT4

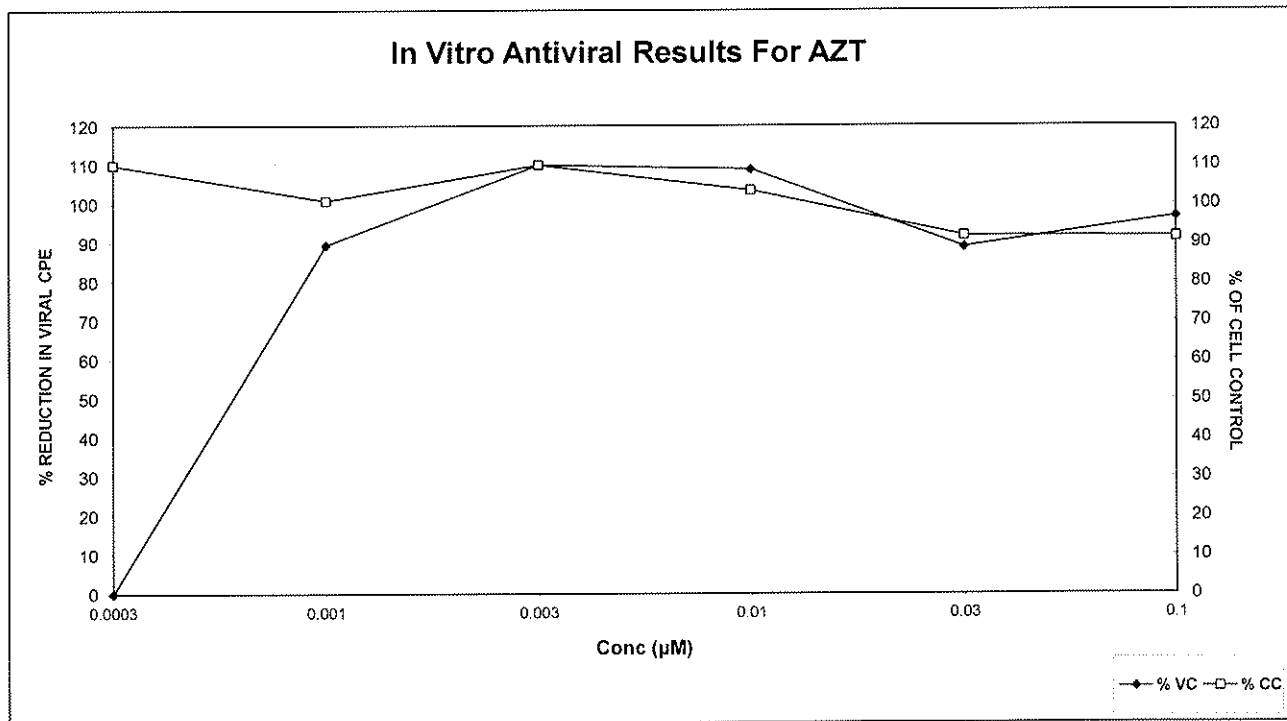
Test Date: 06/14/2013
Date Read: 06/20/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.249
Virus Control: 0.090
Cell Control: 0.952
Differential: 0.862

AZT	25%	50%	95%
TC (µM)	> 0.1	> 0.1	> 0.1
EC (µM)	0.0004	0.0006	0.001
Therapeutic Index (TI)	> 250	> 167	> 100

AZT Conc (µM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.0003	-0.011	0.00	1.052	110	-0.007
0.001	0.771	89.43	0.960	101	-0.005
0.003	1.040	110.00	1.124	110	0.000
0.01	0.939	108.86	0.986	103	-0.003
0.03	0.767	88.91	0.875	92	-0.009
0.1	0.834	96.70	0.872	92	0.008



In Vitro Antiviral Results For Ritonavir

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Ritonavir μM
 0.0003
 0.001
 0.003
 0.01
 0.03
 0.1

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Cell Control	Toxicity Drug 2
	Virus Control	Drug 1			Drug 2	Virus Control	
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data Ritonavir (μM)

0.255	0.230	0.246	0.242	0.254	0.266	0.117	0.115	0.104	0.118	0.112	0.112
	1.186					1.384	0.251	0.248	0.252	1.282	1.261
	1.098					1.210	0.254	0.251	0.251	1.377	1.140
	1.134					1.510	0.283	0.274	0.276	1.128	1.145
	0.362					1.679	0.524	0.490	0.744	0.287	1.208
	0.422					1.279	1.225	0.900	1.030	0.303	1.123
	0.328					1.196	1.159	1.177	1.119	0.329	1.053
						0.245	0.254	0.241	0.246	0.248	0.251

Virus: HIV-1
 Strain: M184V
 Cells: MT4

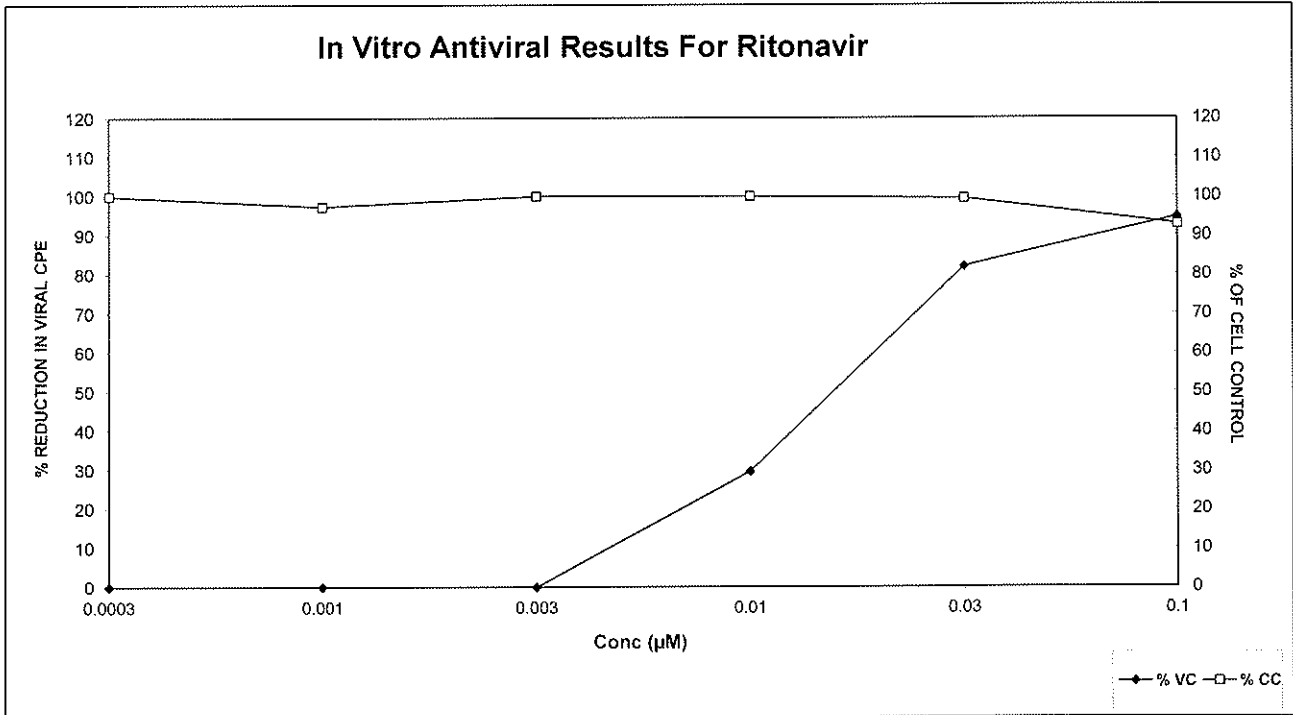
Test Date: 06/14/2013
 Date Read: 06/20/2013
 Operator: TLH

Sponsor: CJSC intelpharm
 Principal Investigator: Hartman
 Project #: 306-01-01

Reagent: 0.249
 Virus Control: 0.090
 Cell Control: 0.952
 Differential: 0.862

Ritonavir	25%	50%	95%
TC (μM)	> 0.1	> 0.1	> 0.1
EC (μM)	0.008	0.02	> 0.1
Therapeutic Index (TI)	> 12.5	> 5	----

Ritonavir Conc (μM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.0003	-0.091	0.00	1.071	100	0.003
0.001	-0.086	0.00	0.927	97	-0.001
0.003	-0.059	0.00	1.081	100	-0.002
0.01	0.255	29.60	1.203	100	-0.008
0.03	0.707	82.03	0.947	99	0.006
0.1	0.817	94.72	0.885	93	-0.004





XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint: XTT	Test Set-Up Date: 06/14/2013
Virus: HIV-1	Date Plate Read: 6/20/2013
Strain: M184V	Technician: TLH
Cells: MT4	PI: Hartman
End Point Antiviral: OD 450/650	Client: CJSC Inteipharm
End Point Viability: OD 450/650	Project #: 306-01-01

Number of Drugs:

Drug 1:
 Name: Fullerene
 High Conc: 100
 Conc Units: µg/ml
 Dilution Factor: Half-Log

Drug 2:
 Name: 3TC
 High Conc: 10
 Conc Units: µM
 Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
100
31.6
10
3.16
1
0.32

Concentration Verification

Conc. 1-6
10
3.16
1
0.32
0.1
0.03

Note: Discontinuous dilution series can be entered directly

Raw Data:

CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		
0.272	0.233	0.229	0.237	0.247	0.244	0.084	0.090	0.102	0.079	0.081	0.072
1.153	1.133	0.269	0.236	0.293	1.170	1.091	0.235	0.245	0.234	0.948	0.982
1.090	1.164	0.716	1.061	0.988	1.063	1.026	0.235	0.225	0.233	1.061	0.797
1.001	1.020	1.068	0.933	1.020	0.815	0.923	0.217	0.278	0.202	0.959	0.725
1.221	0.438	1.134	1.269	1.123	1.051	1.104	0.258	0.252	0.225	0.344	0.954
1.584	0.280	1.548	1.568	1.542	1.260	1.031	0.271	0.403	0.255	0.219	0.887
2.203	0.527	2.017	2.053	2.049	2.165	1.088	0.281	0.252	0.307	0.232	1.161
0.428	0.291	0.256	0.234	0.233	0.230	0.229	0.230	0.225	0.223	0.207	0.214

In Vitro Antiviral Results For Fullerene

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Fullerene (µg/ml)
0.32
1
3.16
10
31.6
100

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Cell Control	Toxicity Drug 2
	Virus Control	Drug 1			Drug 2	Virus Control	
High				High			
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data: Fullerene (µg/ml)

0.272	0.233	0.229	0.237	0.247	0.244	0.084	0.090	0.102	0.079	0.081	0.072
1.153	1.133	0.269	0.236	0.293	1.170					0.948	
1.090	1.164	0.716	1.061	0.988	1.063					1.061	
1.001	1.020	1.068	0.933	1.020	0.815					0.959	
1.221	0.438	1.134	1.269	1.123	1.051					0.344	
1.584	0.280	1.548	1.568	1.542	1.260					0.219	
2.203	0.527	2.017	2.053	2.049	2.165					0.232	
0.428	0.291	0.256	0.234	0.233	0.230						

Virus: HIV-1
Strain: M184V
Cells: MT4

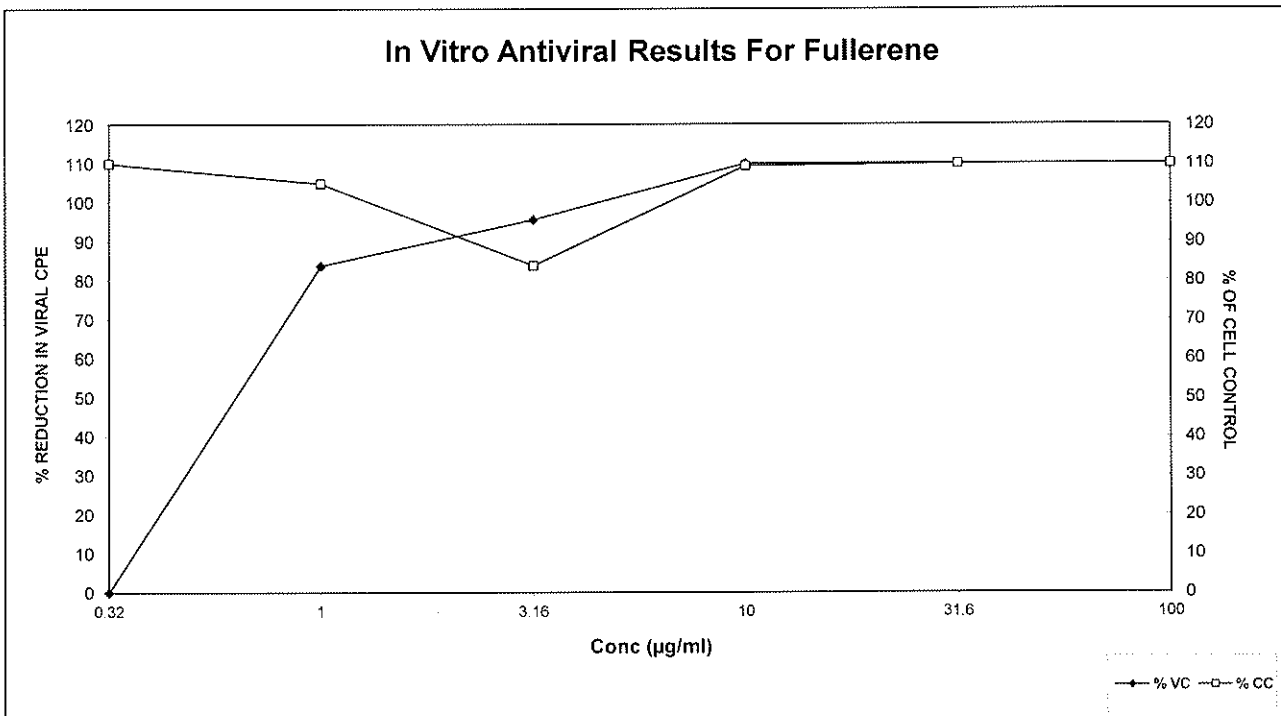
Test Date: 06/14/2013
Date Read: 06/20/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.244
Virus Control: 0.096
Cell Control: 0.804
Differential: 0.708

Fullerene	25%	50%	95%
TC (µg/ml)	> 100	> 100	> 100
EC (µg/ml)	0.45	0.63	2.98
Therapeutic Index (TI)	> 222	> 159	> 33.6

Fullerene Conc (µg/ml)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. in Viral CPE	Mean OD 450/650	% Cell Viability	
0.32	-0.060	0.00	0.932	110	-0.014
1	0.593	83.71	0.843	105	-0.011
3.16	0.677	95.60	0.674	84	-0.009
10	0.823	110.00	0.880	109	0.013
31.6	1.165	110.00	1.131	110	0.048
100	1.515	110.00	1.756	110	0.185



In Vitro Antiviral Results For 3TC

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

3TC μ M
0.03
0.1
0.32
1
3.16
10

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Toxicity Drug 2	Cell Control
	Virus Control	Drug 1			Drug 2		Virus Control
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data 3TC (μ M)

0.272	0.233	0.229	0.237	0.247	0.244	0.084	0.090	0.102	0.079	0.081	0.072
	1.133					1.091	0.235	0.245	0.234	0.948	0.982
	1.164					1.026	0.235	0.225	0.233	1.061	0.797
	1.020					0.923	0.217	0.278	0.202	0.959	0.725
	0.438					1.104	0.258	0.252	0.225	0.344	0.954
	0.280					1.031	0.271	0.403	0.255	0.219	0.887
	0.527					1.088	0.281	0.252	0.307	0.232	1.161
						0.229	0.230	0.225	0.223	0.207	0.214

Virus: HIV-1
Strain: M184V
Cells: MT4

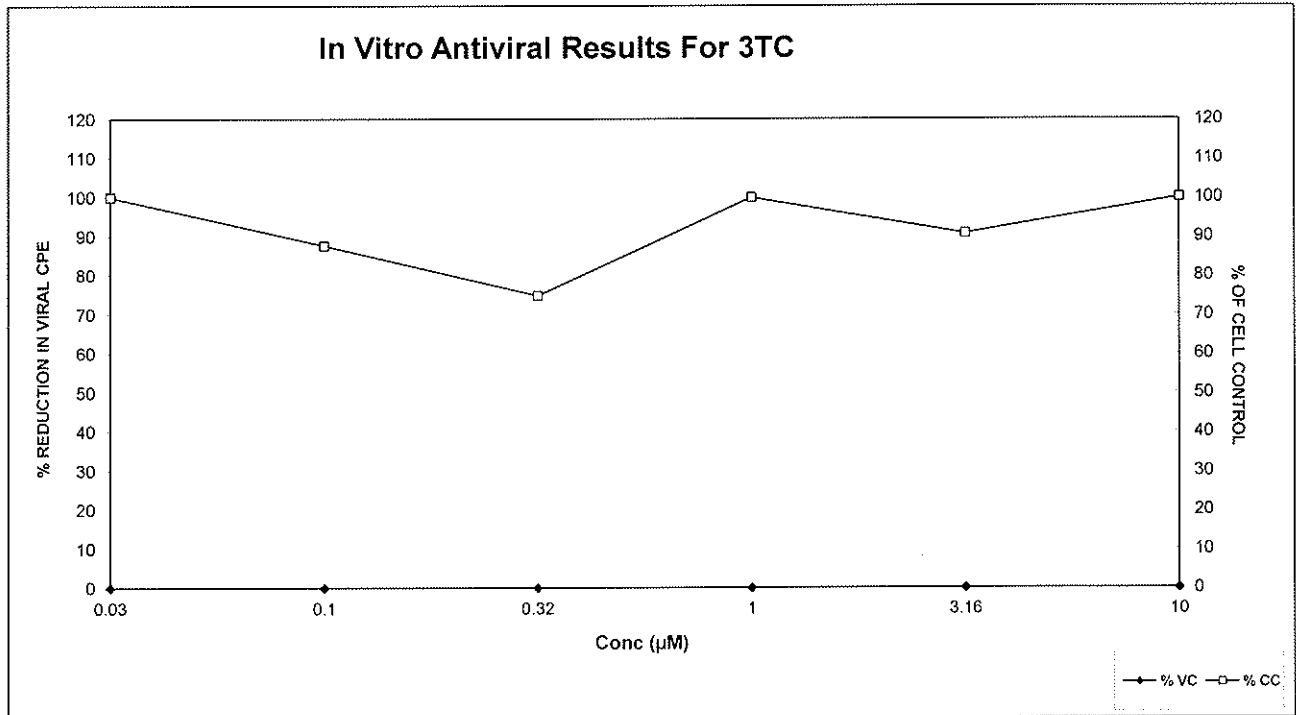
Test Date: 06/14/2013
Date Read: 06/20/2013
Operator: TLH

Sponsor: CJSC intelpharm
Principal Investigator: Hartman
Project #: 306-01-01

Reagent: 0.244
Virus Control: 0.096
Cell Control: 0.804
Differential: 0.708

3TC	25%	50%	95%
TC (μ M)	0.31	> 10	> 10
EC (μ M)	> 10	> 10	> 10
Therapeutic Index (TI)	< 1.00	----	----

3TC	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
Conc (μ M)	Mean OD 450/650	% Red. in Viral CPE	Mean OD 450/650	% Cell Viability	
0.03	-0.072	0.00	0.823	100	-0.030
0.1	-0.072	0.00	0.704	88	-0.037
0.32	-0.087	0.00	0.602	75	-0.021
1	-0.077	0.00	0.803	100	-0.018
3.16	-0.017	0.00	0.729	91	-0.014
10	-0.046	0.00	0.895	100	-0.014





XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint:	XTT	Test Set-Up Date:	06/14/2013
Virus:	HIV-1	Date Plate Read:	6/20/2013
Strain:	4xAZT	Technician:	TLH
Cells:	MT4	PI:	Hartman
End Point Antiviral:	OD 450/650	Client:	CJSC Intelpharm
End Point Viability:	OD 450/650	Project #:	306-01-01

Number of Drugs:

Drug 1:
 Name: AZT
 High Conc: 1
 Conc Units: µM
 Dilution Factor: Half-Log

Drug 2:
 Name: Ritonavir
 High Conc: 0.1
 Conc Units: µM
 Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
 1
 0.32
 0.1
 0.03
 0.01
 0.003

Concentration Verification

Conc. 1-6
 0.1
 0.03
 0.01
 0.003
 0.001
 0.0003

Note: Discontinuous dilution series can be entered directly

Raw Data:

CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		
0.271	0.223	0.224	0.224	0.222	0.221	0.086	0.086	0.089	0.122	0.068	0.109
1.080	1.061	0.245	0.286	0.222	0.969	1.017	0.221	0.251	0.220	0.783	0.675
1.143	0.987	0.274	0.263	0.246	0.890	0.945	0.306	0.206	0.197	1.023	1.529
1.129	1.018	0.294	0.278	0.286	0.942	1.301	0.221	0.205	0.198	1.028	1.119
1.061	0.229	0.219	0.341	0.297	1.147	1.211	0.211	0.414	0.217	0.194	0.925
1.036	0.245	0.292	0.499	0.479	0.911	0.987	0.864	0.811	0.828	0.203	1.208
0.783	0.237	0.982	0.943	1.231	0.722	1.086	0.959	1.429	1.237	0.219	1.122
0.256	0.238	0.239	0.224	0.241	0.228	0.230	0.222	0.222	0.231	0.220	0.235
CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		

In Vitro Antiviral Results For AZT

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

AZT (µM)
0.003
0.01
0.03
0.1
0.32
1

Media Control				Plastic Control				
Toxicity Drug 1	Cell Control	Low		Toxicity Drug 2	Low		Cell Control	
	Virus Control	Drug 1			Drug 2		Virus Control	Toxicity Drug 2
		High			High			
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)				

Raw Data: AZT (µM)

0.271	0.223	0.224	0.224	0.222	0.221	0.086	0.086	0.089	0.122	0.068	0.109
1.080	1.061	0.245	0.286	0.222	0.969					0.783	
1.143	0.987	0.274	0.263	0.246	0.890					1.023	
1.129	1.018	0.294	0.278	0.286	0.942					1.028	
1.061	0.229	0.219	0.341	0.297	1.147					0.194	
1.036	0.245	0.292	0.499	0.479	0.911					0.203	
0.783	0.237	0.982	0.943	1.231	0.722					0.219	
0.256	0.238	0.239	0.224	0.241	0.228						

Virus: HIV-1
Strain: 4xAZT
Cells: MT4

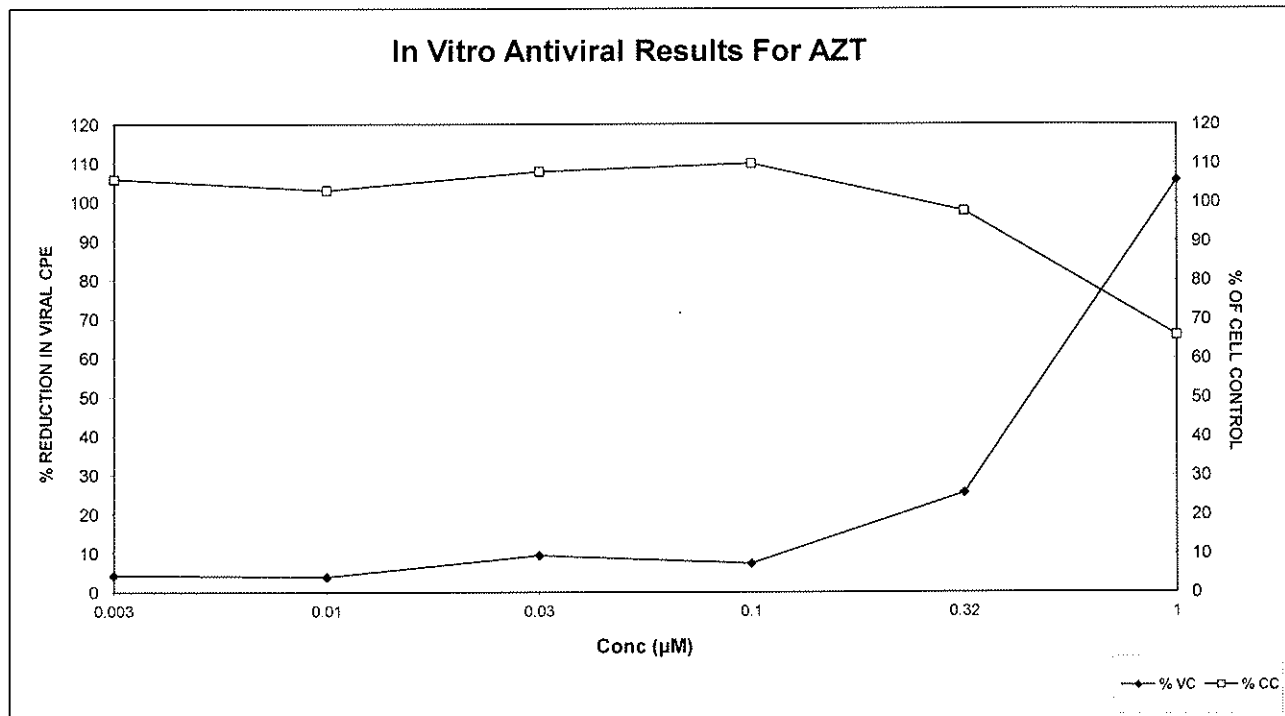
Test Date: 06/14/2013
Date Read: 06/20/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.231
Virus Control: -0.010
Cell Control: 0.752
Differential: 0.762

AZT	25%	50%	95%
TC (µM)	0.72	> 1	> 1
EC (µM)	0.31	0.45	0.86
Therapeutic Index (TI)	2.32	> 2.22	> 1.16

AZT Conc (µM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.003	0.033	4.33	0.797	106	-0.003
0.01	0.030	3.91	0.776	103	0.010
0.03	0.072	9.46	0.812	108	-0.007
0.1	0.057	7.42	0.865	110	0.008
0.32	0.195	25.54	0.736	98	0.007
1	0.806	105.72	0.496	66	0.025



In Vitro Antiviral Results For Ritonavir

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Ritonavir μM
 0.0003
 0.001
 0.003
 0.01
 0.03
 0.1

Media Control				Plastic Control			
Toxicity Drug 1	Cell Control	Low	Toxicity Drug 1	Toxicity Drug 2	Low	Cell Control	Toxicity Drug 2
	Virus Control	Drug 1			Drug 2	Virus Control	
		High			High		
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)			

Raw Data Ritonavir (μM)

0.271	0.223	0.224	0.224	0.222	0.221	0.086	0.086	0.089	0.122	0.068	0.109
	1.061					1.017	0.221	0.251	0.220	0.783	0.675
	0.987					0.945	0.306	0.206	0.197	1.023	1.529
	1.018					1.301	0.221	0.205	0.198	1.028	1.119
	0.229					1.211	0.211	0.414	0.217	0.194	0.925
	0.245					0.987	0.864	0.811	0.828	0.203	1.208
	0.237					1.086	0.959	1.429	1.237	0.219	1.122
						0.230	0.222	0.222	0.231	0.220	0.235

Virus: HIV-1
 Strain: 4xAZT
 Cells: MT4

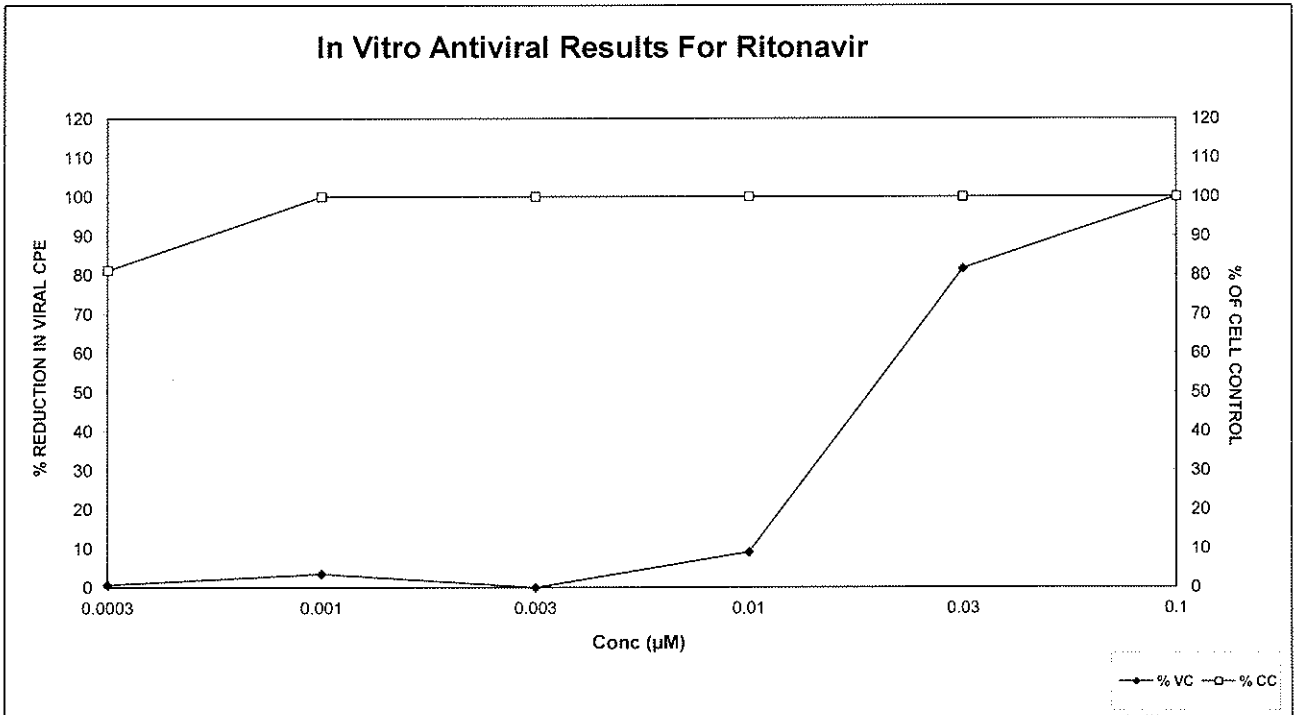
Test Date: 06/14/2013
 Date Read: 06/20/2013
 Operator: TLH

Sponsor: CJSC Intelpharm
 Principal Investigator: Hartman
 Project #: 306-01-01

Reagent: 0.231
 Virus Control: -0.010
 Cell Control: 0.752
 Differential: 0.762

Ritonavir	25%	50%	95%
TC (μM)	> 0.1	> 0.1	> 0.1
EC (μM)	0.01	0.02	0.07
Therapeutic Index (TI)	> 10	> 5	> 1.43

Ritonavir	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
Conc (μM)	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.0003	0.005	0.67	0.611	81	0.005
0.001	0.026	3.46	1.017	100	-0.011
0.003	-0.013	0.00	0.979	100	0.000
0.01	0.069	9.04	0.847	100	-0.009
0.03	0.622	81.59	0.875	100	-0.009
0.1	0.988	100.00	0.875	100	-0.001





XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint: XTT	Test Set-Up Date: 06/14/2013
Virus: HIV-1	Date Plate Read: 6/20/2013
Strain: 4xAZI	Technician: TLH
Cells: MT4	PI: Hartman
End Point Antiviral: OD 450/650	Client: CJSC Intelpharm
End Point Viability: OD 450/650	Project #: 306-01-01

Number of Drugs:

Drug 1:
 Name: Fullerene
 High Conc: 100
 Conc Units: µg/ml
 Dilution Factor: Half-Log

Drug 2:
 Name:
 High Conc:
 Conc Units: µM
 Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
100
31.6
10
3.16
1
0.32

Concentration Verification

Conc. 1-6
0
0
0
0
0
0

Note: Discontinuous dilution series can be entered directly

Raw Data:

CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		
0.268	0.257	0.246	0.240	0.243	0.252	0.100	0.105	0.086	0.110	0.088	0.096
1.454	1.225	0.392	0.196	0.213	1.163	1.049	0.310	0.240	0.259	1.082	0.982
1.157	1.238	1.322	1.286	0.734	0.956	1.002	0.197	0.398	0.190	1.191	0.848
1.226	1.040	1.368	1.381	1.273	1.144	1.227	0.197	0.183	0.218	0.915	0.869
1.316	0.198	1.357	1.513	1.373	1.186	1.078	0.203	0.215	0.211	0.415	1.106
1.700	0.240	1.794	1.840	1.652	1.510	1.128	0.206	0.197	0.191	0.239	0.938
2.474	0.252	2.361	2.259	2.198	2.177	1.233	0.197	0.194	0.200	0.212	1.070
0.448	0.290	0.244	0.219	0.224	0.228	0.178	0.188	0.177	0.179	0.171	0.190

In Vitro Antiviral Results For Fullerene

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Fullerene (µg/ml)
0.32
1
3.16
10
31.6
100

Media Control				Plastic Control				
Toxicity Drug 1	Cell Control	Low		Toxicity Drug 2	Low		Cell Control	
	Virus Control	Drug 1			Drug 2		Virus Control	Toxicity Drug 2
		High			High			
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)				

Raw Data: Fullerene (µg/ml)

0.268	0.257	0.246	0.240	0.243	0.252	0.100	0.105	0.086	0.110	0.088	0.096
1.454	1.225	0.392	0.196	0.213	1.163					1.082	
1.157	1.238	1.322	1.286	0.734	0.956					1.191	
1.226	1.040	1.368	1.381	1.273	1.144					0.915	
1.316	0.198	1.357	1.513	1.373	1.186					0.415	
1.700	0.240	1.794	1.840	1.652	1.510					0.239	
2.474	0.252	2.361	2.259	2.198	2.177					0.212	
0.448	0.290	0.244	0.219	0.224	0.228						

Virus: HIV-1
Strain: 4xAZT
Cells: MT4

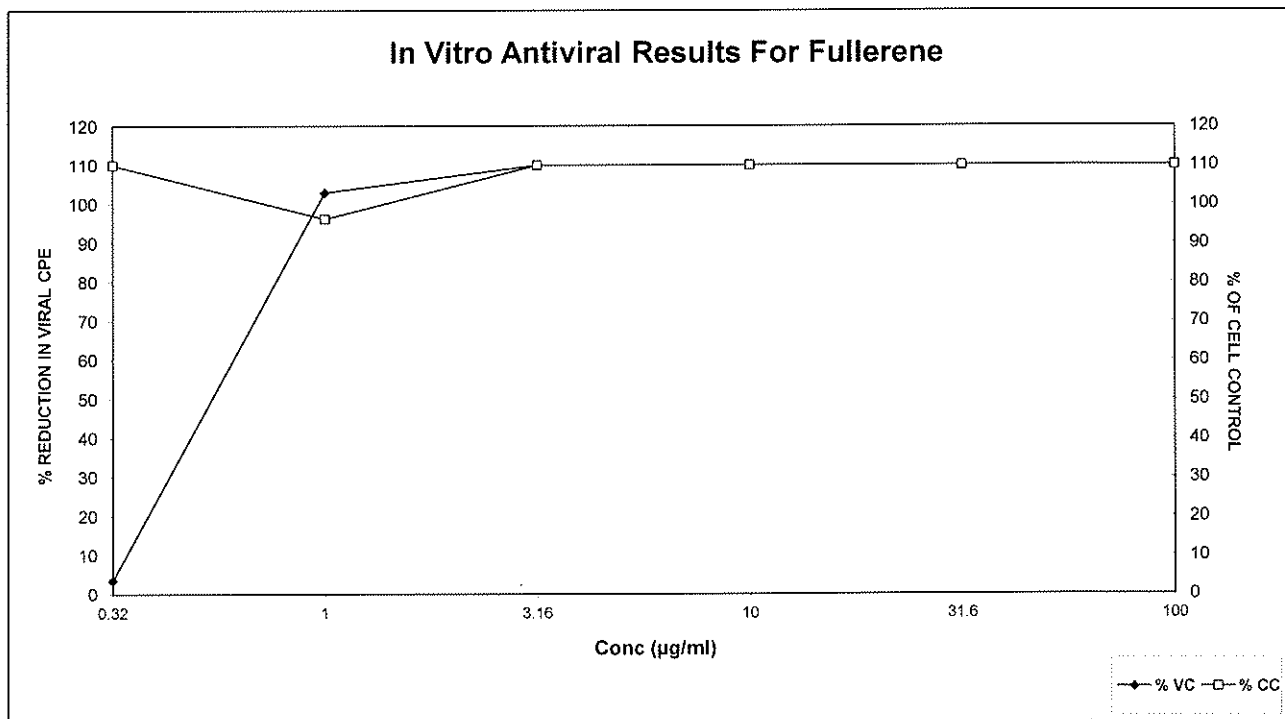
Test Date: 06/14/2013
Date Read: 06/20/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.251
Virus Control: 0.009
Cell Control: 0.864
Differential: 0.856

Fullerene	25%	50%	95%
TC (µg/ml)	> 100	> 100	> 100
EC (µg/ml)	0.41	0.55	0.91
Therapeutic Index (TI)	> 244	> 182	> 110

Fullerene Conc (µg/ml)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.32	0.030	3.50	1.080	110	-0.023
1	0.881	102.93	0.832	96	-0.027
3.16	1.114	110.00	0.966	110	-0.032
10	1.162	110.00	1.007	110	-0.007
31.6	1.464	110.00	1.315	110	0.039
100	1.816	110.00	1.877	110	0.197





XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint: XTT	Test Set-Up Date: 06/14/2013
Virus: HIV-1	Date Plate Read: 6/20/2013
Strain: V82F/184V	Technician: TLH
Cells: MT4	PI: Hartman
End Point Antiviral: OD 450/650	Client: CJSC Intelpharm
End Point Viability: OD 450/650	Project #: 306-01-01

Number of Drugs:

Drug 1:	Drug 2:
Name: AZT	Name: Ritonavir
High Conc: 0.1	High Conc: 1
Conc Units: μ M	Conc Units: μ M
Dilution Factor: Half-Log	Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
 0.1
 0.03
 0.01
 0.003
 0.001
 0.0003

Concentration Verification

Conc. 1-6
 1
 0.32
 0.1
 0.03
 0.01
 0.003

Note: Discontinuous dilution series can be entered directly

Raw Data:

CC	VC	Color Ctrl	Tox	Bold = HT	CC	VC	Color Ctrl	Tox	Bold = HT		
0.261	0.227	0.224	0.230	0.261	0.232	0.137	0.105	0.112	0.092	0.095	0.088
1.230	1.128	0.235	0.238	0.246	1.021	1.045	0.170	0.119	0.133	0.926	1.036
1.208	1.055	0.691	0.650	0.603	0.901	0.958	0.314	0.320	0.433	1.041	1.112
0.875	0.906	0.950	0.859	0.967	0.818	0.968	0.364	0.270	0.371	1.047	1.084
1.119	0.071	0.987	1.007	1.217	1.040	1.098	0.220	0.251	0.461	0.209	1.182
1.128	0.211	1.055	0.900	1.102	1.066	1.248	0.452	0.354	0.577	0.437	1.099
1.080	0.080	1.015	0.971	0.928	0.940	1.055	0.392	0.436	0.551	0.409	1.030
0.260	0.232	0.232	0.239	0.235	0.229	0.229	0.232	0.227	0.226	0.218	0.230

In Vitro Antiviral Results For AZT

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

AZT (µM)
0.0003
0.001
0.003
0.01
0.03
0.1

Media Control				Plastic Control				
Toxicity Drug 1	Cell Control	Low		Toxicity Drug 2	Low		Cell Control	
	Virus Control	Drug 1			Drug 2		Virus Control	Toxicity Drug 2
		High			High			
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)				

Raw Data: AZT (µM)

0.261	0.227	0.224	0.230	0.261	0.232	0.137	0.105	0.112	0.092	0.095	0.088
1.230	1.128	0.235	0.238	0.246	1.021					0.926	
1.208	1.055	0.691	0.650	0.603	0.901					1.041	
0.875	0.906	0.950	0.859	0.967	0.818					1.047	
1.119	0.071	0.987	1.007	1.217	1.040					0.209	
1.128	0.211	1.055	0.900	1.102	1.066					0.437	
1.080	0.080	1.015	0.971	0.928	0.940					0.409	
0.260	0.232	0.232	0.239	0.235	0.229						

Virus: HIV-1
Strain: V82F/184V
Cells: MT4

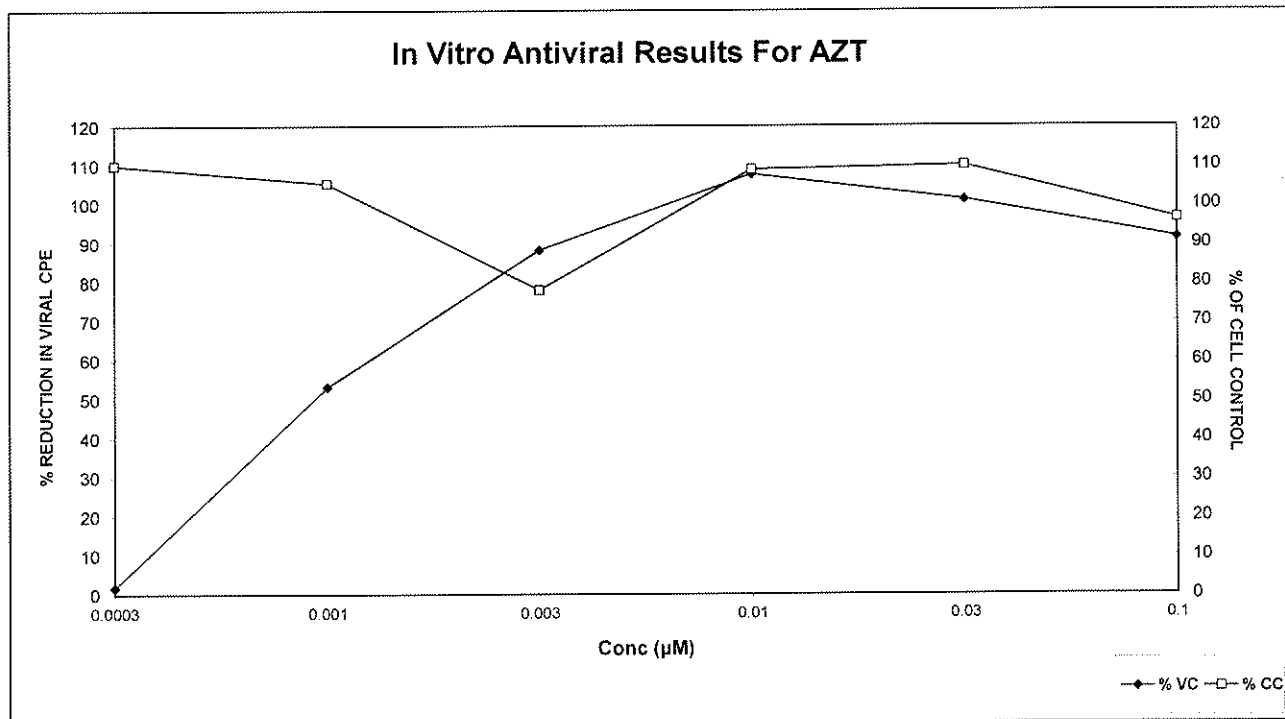
Test Date: 06/14/2013
Date Read: 06/20/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.239
Virus Control: -0.003
Cell Control: 0.778
Differential: 0.781

AZT	25%	50%	95%
TC (µM)	> 0.1	> 0.1	> 0.1
EC (µM)	0.0005	0.0009	0.005
Therapeutic Index (TI)	> 200	> 111	> 20

AZT Conc (µM)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.0003	0.014	1.77	0.896	110	-0.010
0.001	0.416	53.27	0.820	105	-0.004
0.003	0.689	88.24	0.607	78	0.000
0.01	0.841	107.64	0.847	109	-0.007
0.03	0.790	101.11	0.865	110	-0.007
0.1	0.714	91.48	0.750	96	0.021



In Vitro Antiviral Results For Ritonavir

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Ritonavir μ M
 0.003
 0.01
 0.03
 0.1
 0.32
 1

Media Control				Plastic Control				
Toxicity Drug 1	Cell Control	Low		Toxicity Drug 2	Low		Cell Control	
	Virus Control	Drug 1			Drug 2		Virus Control	Toxicity Drug 2
		High			High			
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)				

Raw Data Ritonavir (μ M)

0.261	0.227	0.224	0.230	0.261	0.232	0.137	0.105	0.112	0.092	0.095	0.088
	1.128					1.045	0.170	0.119	0.133	0.926	1.036
	1.055					0.958	0.314	0.320	0.433	1.041	1.112
	0.906					0.968	0.364	0.270	0.371	1.047	1.084
	0.071					1.098	0.220	0.251	0.461	0.209	1.182
	0.211					1.248	0.452	0.354	0.577	0.437	1.099
	0.080					1.055	0.392	0.436	0.551	0.409	1.030
						0.229	0.232	0.227	0.226	0.218	0.230

Virus: HIV-1
 Strain: V82F/I84V
 Cells: MT4

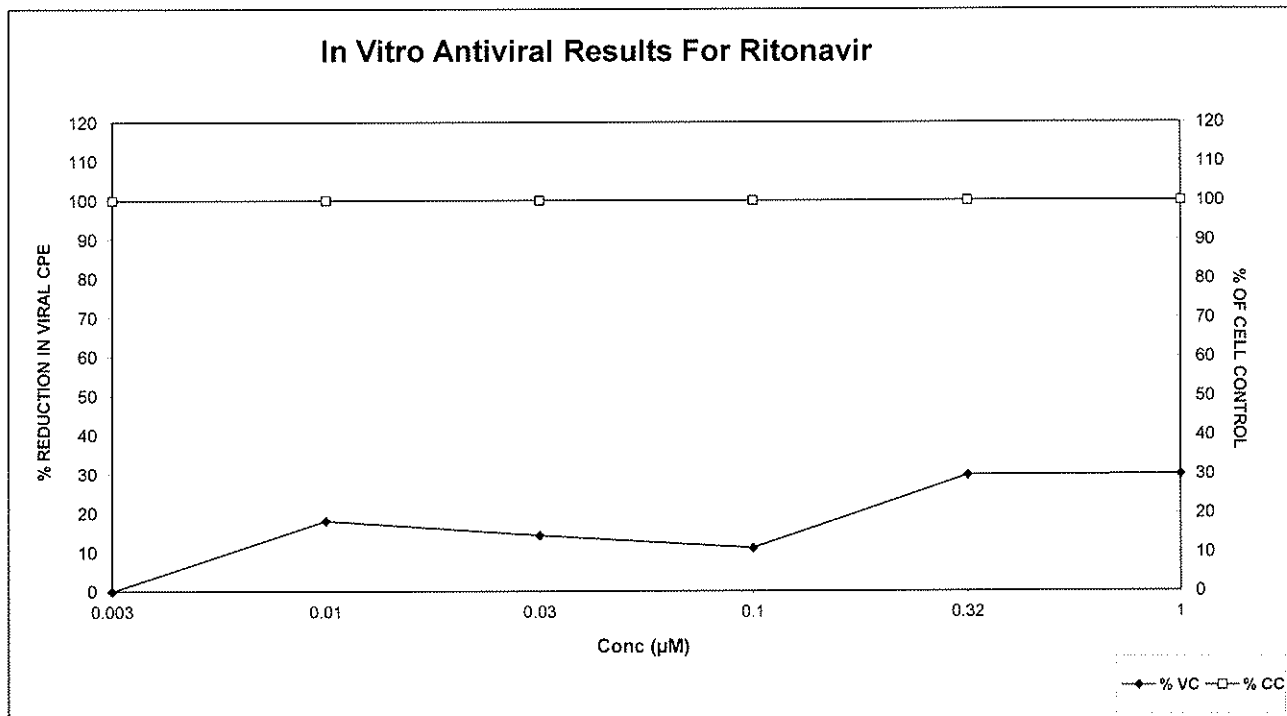
Test Date: 06/14/2013
 Date Read: 06/20/2013
 Operator: TLH

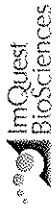
Sponsor: CJSC Intelpharm
 Principal Investigator: Hartman
 Project #: 306-01-01

Reagent: 0.239
 Virus Control: -0.003
 Cell Control: 0.778
 Differential: 0.781

Ritonavir	25%	50%	95%
TC (μ M)	> 1	> 1	> 1
EC (μ M)	0.24	> 1	> 1
Therapeutic Index (TI)	> 4.17	----	----

Ritonavir	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
Conc (μ M)	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.003	-0.087	0.00	0.810	100	-0.009
0.01	0.141	18.04	0.817	100	-0.021
0.03	0.112	14.30	0.800	100	-0.013
0.1	0.086	11.06	0.913	100	-0.012
0.32	0.232	29.73	0.942	100	-0.008
1	0.234	29.94	0.814	100	-0.011





XTT Cytoprotection Assay - Data Template

Assay Type: HIV-1 Cytoprotection

Assay Endpoint: XTT	Test Set-Up Date: 06/14/2013
Virus: HIV-1	Date Plate Read: 6/20/2013
Strain: V82F/184V	Technician: TLH
Cells: MT4	Pi: Hartman
End Point Antiviral: OD 450/650	Client: CJSC Intelpharm
End Point Viability: OD 450/650	Project #: 306-01-01

Number of Drugs:

Drug 1:
 Name: Fullerene
 High Conc: 100
 Conc Units: µg/ml
 Dilution Factor: Half-Log

Drug 2:
 Name:
 High Conc:
 Conc Units: µM
 Dilution Factor: Half-Log

Concentration Verification

Conc. 1-6
100
31.6
10
3.16
1
0.32

Concentration Verification

Conc. 1-6
0
0
0
0
0
0

Note: Discontinuous dilution series can be entered directly

Raw Data:

	0.254	0.248	0.250	0.251	0.245	0.253	0.106	0.119	0.117	0.097	0.106	0.089
CC	VC	Color Ctrl	Tox	Bold = HT	VC	CC	VC	Color Ctrl	Tox	Bold = HT		
1.184	1.164	0.297	0.102	0.186	1.004	1.091	0.190	0.215	0.342	1.100	1.031	1.031
1.265	1.157	1.055	1.065	1.125	1.037	1.175	0.216	0.175	0.292	1.225	1.134	1.134
1.251	1.108	1.156	1.174	1.413	1.012	1.264	0.178	0.160	0.105	1.198	1.216	1.216
1.458	0.102	1.328	1.313	1.371	1.244	1.237	0.196	0.185	0.313	0.236	1.036	1.036
1.801	0.227	1.738	1.764	1.742	1.614	1.145	0.143	0.117	0.195	0.269	1.061	1.061
2.784	0.236	2.554	2.479	2.619	2.371	1.182	0.092	0.233	0.104	0.222	0.909	0.909
0.476	0.295	0.255	0.233	0.229	0.228	0.231	0.218	0.222	0.217	0.202	0.211	0.211

In Vitro Antiviral Results For Fullerene

Assay: HIV-1 Cytoprotection (XTT)

Sponsor: CJSC Intelpharm

Concentration

Fullerene (µg/ml)	Media Control				Plastic Control			
	Toxicity Drug 1	Cell Control	Low		Toxicity Drug 2	Low		Toxicity Drug 2
0.32								
1								
3.16								
10								
31.6								
100								
Color Control Drug 1 (High to Low)				Color Control Drug 2 (High to Low)				

Raw Data: Fullerene (µg/ml)

0.254	0.248	0.250	0.251	0.245	0.253	0.106	0.119	0.117	0.097	0.106	0.089
1.184	1.164	0.297	0.102	0.186	1.004					1.100	
1.265	1.157	1.055	1.065	1.125	1.037					1.225	
1.251	1.108	1.156	1.174	1.413	1.012					1.198	
1.458	0.102	1.328	1.313	1.371	1.244					0.236	
1.801	0.227	1.738	1.764	1.742	1.614					0.269	
2.784	0.236	2.554	2.479	2.619	2.371					0.222	
0.476	0.295	0.255	0.233	0.229	0.228						

Virus: HIV-1
Strain: V82F/184V
Cells: MT4

Test Date: 06/14/2013
Date Read: 06/20/2013
Operator: TLH

Sponsor: CJSC Intelpharm
Principle Investigator: Hartman
Project #: 306-01-01

Reagent: 0.250
Virus Control: -0.035
Cell Control: 0.909
Differential: 0.943

Fullerene	25%	50%	95%
TC (µg/ml)	> 100	> 100	> 100
EC (µg/ml)	0.43	0.59	1.07
Therapeutic Index (TI)	> 233	> 169	> 93.5

Fullerene Conc (µg/ml)	Antiviral Test Values		Cytotoxicity Test Values		Colorimetric Control
	Mean OD 450/650	% Red. In Viral CPE	Mean OD 450/650	% Cell Viability	
0.32	0.002	0.18	0.866	95	-0.022
1	0.888	94.11	0.922	101	-0.021
3.16	1.050	110.00	0.899	99	-0.017
10	1.118	110.00	1.096	110	0.004
31.6	1.488	110.00	1.413	110	0.045
100	2.109	110.00	2.101	110	0.226

