

**Table S1. 95% Confidence intervals for the estimated model parameters.**  
95% Confidence Intervals Obtained by a Bootstrap Procedure (Morphine group: M1-M6; Control group: C1-C6). Last row for each group represents estimates for geometric mean viral load and mean CD4 count.

Monkey		$\delta$	$\lambda$	$r$	$q$	$\beta_l$	$\beta_h$
M1	Lower	0.33	$1.48 \times 10^3$	0.61	$2.69 \times 10^{-7}$	$5.62 \times 10^{-9}$	$5.72 \times 10^{-8}$
	Upper	0.45	$2.10 \times 10^3$	0.77	$4.99 \times 10^{-7}$	$7.69 \times 10^{-9}$	$9.52 \times 10^{-7}$
M2	Lower	0.30	$2.06 \times 10^3$	0.55	$3.73 \times 10^{-7}$	$3.62 \times 10^{-10}$	$7.20 \times 10^{-8}$
	Upper	0.39	$2.76 \times 10^3$	0.70	$5.94 \times 10^{-7}$	$6.03 \times 10^{-10}$	$1.20 \times 10^{-7}$
M3	Lower	0.38	$7.06 \times 10^3$	0.38	$3.63 \times 10^{-6}$	$5.70 \times 10^{-9}$	$6.60 \times 10^{-8}$
	Upper	0.48	$9.43 \times 10^3$	0.46	$5.92 \times 10^{-6}$	$7.28 \times 10^{-9}$	$9.85 \times 10^{-8}$
M4	Lower	0.51	$7.06 \times 10^3$	0.52	$2.39 \times 10^{-7}$	$5.24 \times 10^{-9}$	$1.27 \times 10^{-8}$
	Upper	0.65	$9.71 \times 10^3$	0.79	$2.41 \times 10^{-7}$	$1.08 \times 10^{-8}$	$1.90 \times 10^{-8}$
M5	Lower	0.48	$2.55 \times 10^3$	0.29	$3.43 \times 10^{-8}$	$1.14 \times 10^{-11}$	$8.16 \times 10^{-8}$
	Upper	0.66	$3.42 \times 10^3$	0.38	$4.53 \times 10^{-8}$	$1.90 \times 10^{-11}$	$1.22 \times 10^{-7}$
M6	Lower	0.30	$1.10 \times 10^3$	0.50	$3.53 \times 10^{-8}$	$5.08 \times 10^{-10}$	$7.57 \times 10^{-8}$
	Upper	0.39	$1.48 \times 10^3$	0.66	$4.63 \times 10^{-8}$	$6.53 \times 10^{-10}$	$1.23 \times 10^{-7}$
Mean Data	Lower	0.34	$5.17 \times 10^3$	0.48	$4.30 \times 10^{-7}$	$5.13 \times 10^{-10}$	$2.78 \times 10^{-8}$
	Upper	0.41	$5.18 \times 10^3$	0.52	$1.23 \times 10^{-6}$	$5.56 \times 10^{-10}$	$3.03 \times 10^{-8}$
C1	Lower	0.58	$2.96 \times 10^3$	0.13	0.16	$8.15 \times 10^{-12}$	$5.81 \times 10^{-8}$
	Upper	0.80	$3.69 \times 10^3$	0.16	0.22	$1.30 \times 10^{-11}$	$7.36 \times 10^{-8}$
C2	Lower	0.57	$3.22 \times 10^3$	0.18	0.16	$7.40 \times 10^{-10}$	$5.62 \times 10^{-8}$
	Upper	0.80	$3.65 \times 10^3$	0.21	0.22	$9.26 \times 10^{-10}$	$7.18 \times 10^{-8}$
C3	Lower	0.35	$1.84 \times 10^3$	0.17	0.21	$6.22 \times 10^{-10}$	$7.41 \times 10^{-8}$
	Upper	0.43	$2.04 \times 10^3$	0.23	0.28	$7.82 \times 10^{-10}$	$9.76 \times 10^{-8}$
C4	Lower	0.61	$3.20 \times 10^3$	0.13	0.19	$3.82 \times 10^{-9}$	$1.24 \times 10^{-7}$
	Upper	0.84	$4.28 \times 10^3$	0.16	0.27	$6.37 \times 10^{-9}$	$2.07 \times 10^{-7}$
C5	Lower	0.58	$3.39 \times 10^3$	0.15	0.19	$3.66 \times 10^{-11}$	$4.87 \times 10^{-8}$
	Upper	0.82	$4.34 \times 10^3$	0.19	0.26	$5.18 \times 10^{-11}$	$6.53 \times 10^{-8}$
C6	Lower	0.58	$2.83 \times 10^3$	0.13	0.17	$7.57 \times 10^{-11}$	$6.47 \times 10^{-8}$
	Upper	0.87	$3.48 \times 10^3$	0.17	0.25	$1.08 \times 10^{-10}$	$8.78 \times 10^{-8}$
Mean Data	Lower	0.72	$3.68 \times 10^3$	0.14	0.22	$9.8 \times 10^{-11}$	$7.73 \times 10^{-8}$
	Upper	0.79	$3.69 \times 10^3$	0.16	0.25	$1.19 \times 10^{-10}$	$8.45 \times 10^{-8}$