

S1 File. Effect of parameter values on HIV progression in vivo.

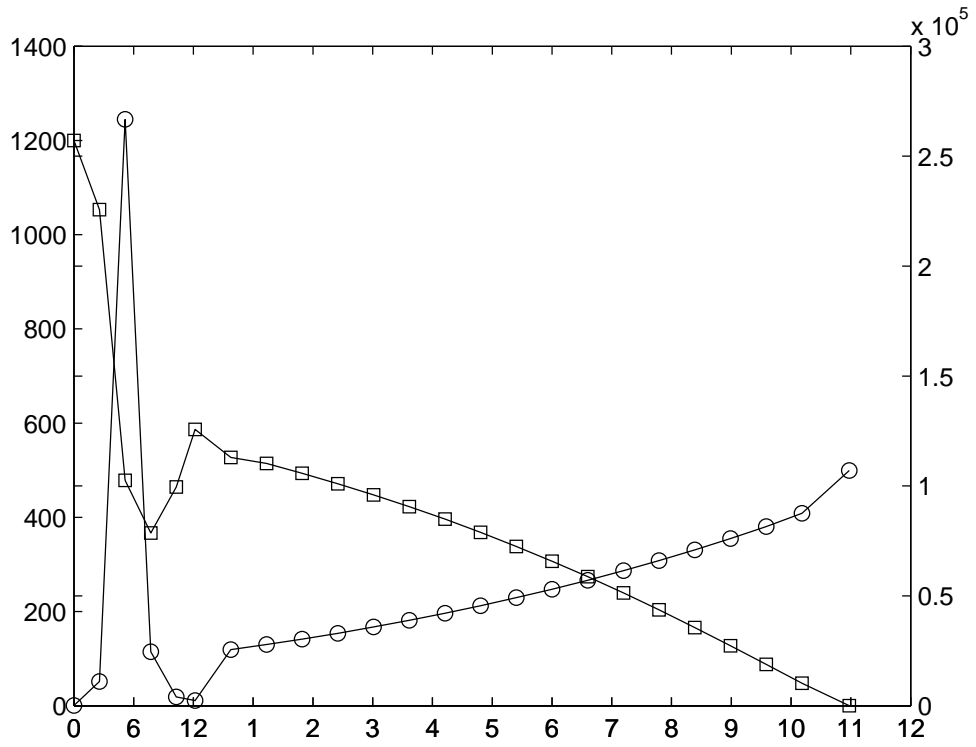


Figure A. A simulation of typical course of human immunodeficiency virus infection: CD4+ T cells(—□) and viral load (—○). $\beta_k = 3400, \alpha_k = 1.1, \beta_\lambda = 5000, \alpha_\lambda = 0.04, T_m = 11 \times 365$.

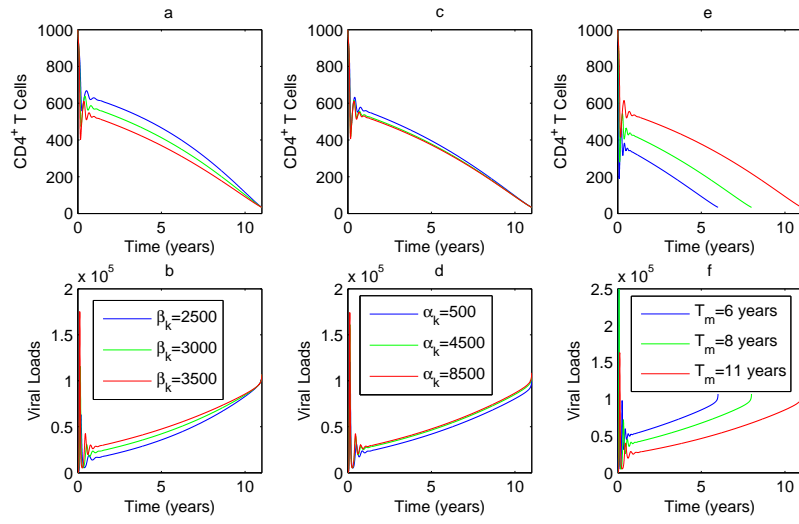


Figure B. Simulations of HIV disease progressions with different shape (α_k), scale (β_k) and location parameters (T_m). $\beta_k = 3400$, $\alpha_k = 1.1$, $\beta_\lambda = 5000$, $\alpha_\lambda = 0.04$, $T_m = 11 \times 365$.

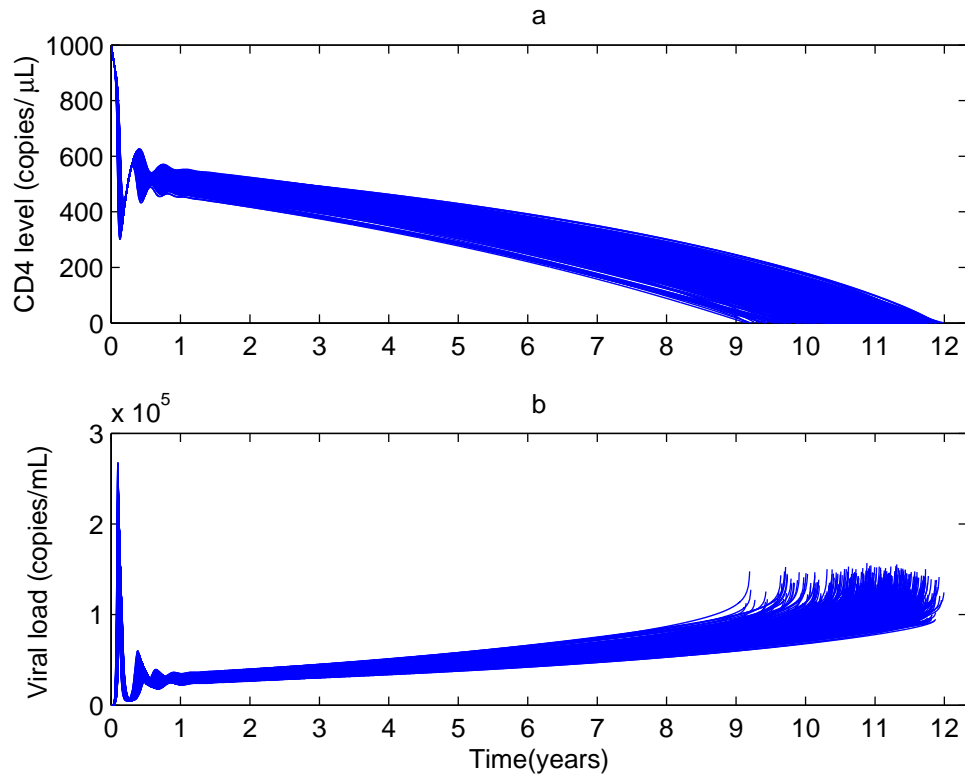


Figure C. 1000 simulations of typical course of human immunodeficiency virus infection without ART.

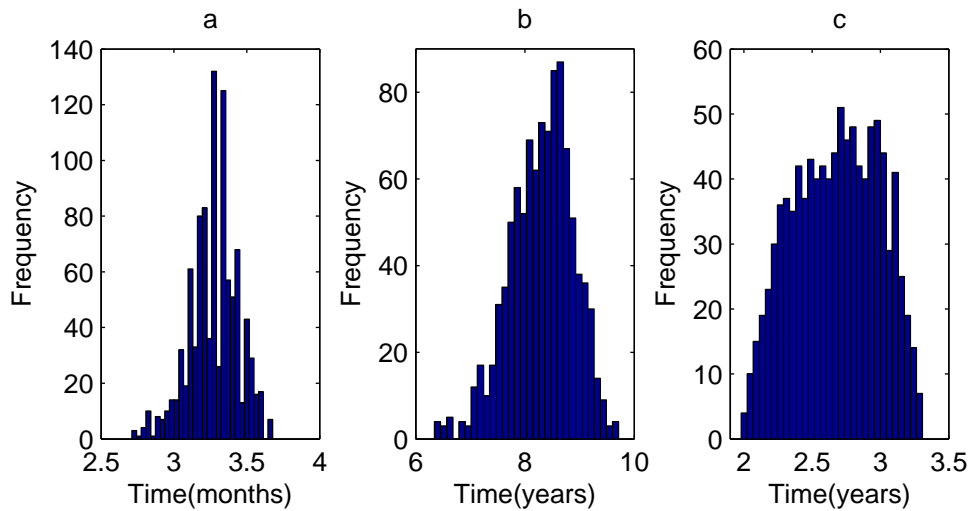


Figure D. Duration of different infection stages. a. duration of primary stage; b. duration of asymptomatic stage; c. duration of AIDS stage.

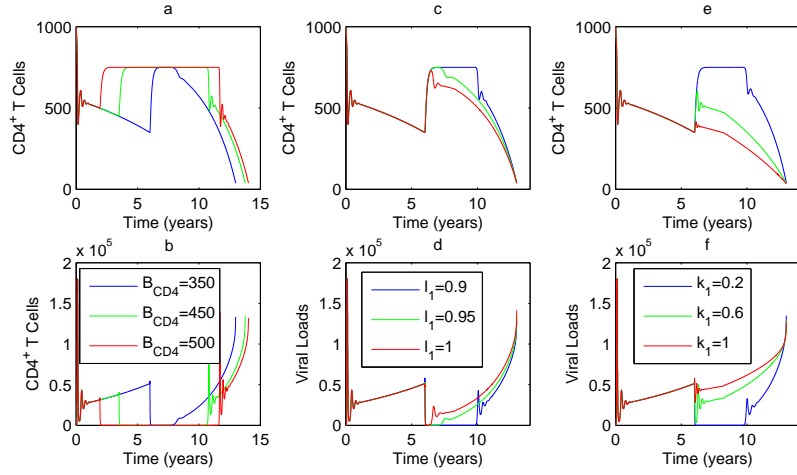


Figure E. Effects of key factors on the HIV disease progression. a-b. Baseline CD4⁺ cell counts with $B_{CD4} = 350, 450, 500$; c-d. $l_1 = 0.9, 0.95, 1$, $l_1 = l_2$; e-f. $k_1 = 0.2, 0.6, 1$, $k_1 = k_2$. $\beta_k = 3400, \alpha_k = 1.1, \beta_\lambda = 5000, \alpha_\lambda = 0.04, T_m = 11$ years, $\tau_m = 35$ years.

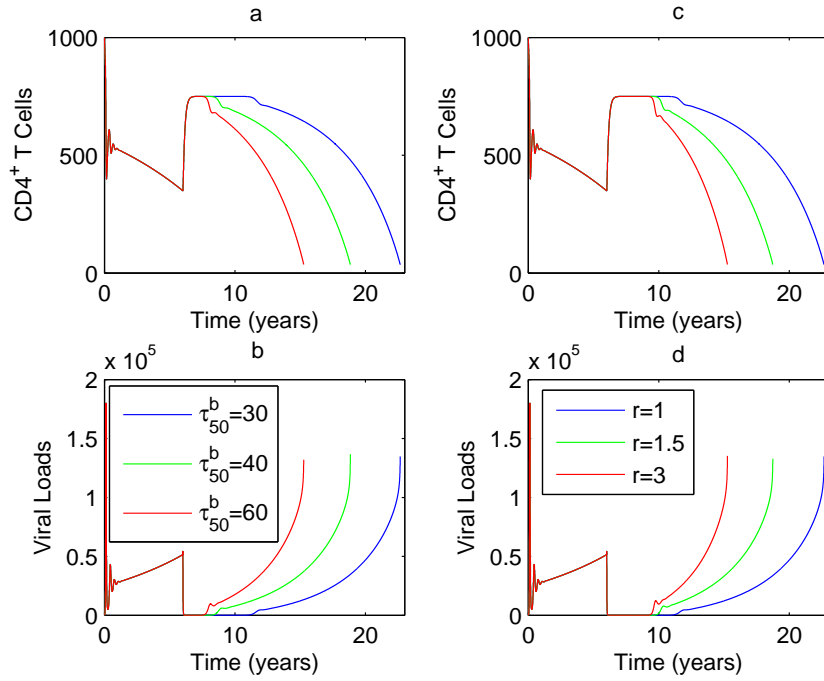


Figure F. Effects of key factors on the HIV disease progression. a-b. $\tau_{50}^b = 30, 40, 60$, $r = 1$; c-d. $r = 1, 1.5, 3$, $\tau_{50}^b = 30$. $\beta_k = 3400, \alpha_k = 1.1, \beta_\lambda = 5000, \alpha_\lambda = 0.04, T_m = 11$ years, $\tau_m = 35$ years.

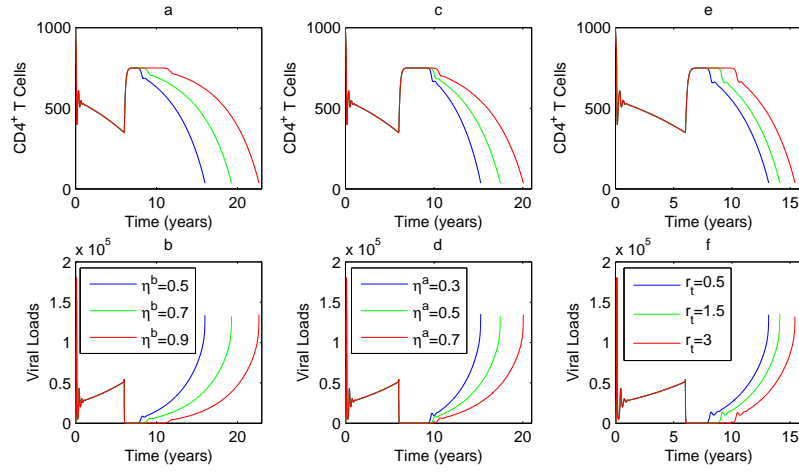


Figure G. Effects of key factors on the HIV disease progression. a-b. $\eta^b = 0.5, 0.7, 0.9$, $\eta^a = \eta^b$; c-d. $\eta^a = 0.3, 0.5, 0.7$, $\eta^b = 0.9$; e-f. $r_t = 0.5, 1.5, 3$. $\beta_k = 3400$, $\alpha_k = 1.1$, $\beta_\lambda = 5000$, $\alpha_\lambda = 0.04$, $T_m = 11$ years, $\tau_m = 35$ years.