$$\frac{d\ tat}{dt} = -dtt * tat \quad (1)$$

$$\frac{d\ nRNA}{dt} = (b + v * tat)/(k + tat) - ex * nRNA - dr * nRNA \quad (2)$$

$$\frac{d\ cRNA}{dt} = ex * nRNA - dr * cRNA \quad (3)$$

$$\frac{d\ P}{dt} = vp * cRNA/(kp + cRNA) - dp * P \quad (4)$$

$$\frac{d\ LTR}{dt} = k_{deacetyl} pTEFb_a + k_{transact} pTEFb_a - k_{acetyl}(LTR)(pTEFb_d) - k_{transact}(LTR)(nRNA)(Tat)$$

$$\frac{d\ nRNA}{dt} = k_{basal} LTR + k_{transact} pTEFb_a - k_{export} nRNA - k_{transact}(LTR)(nRNA)(Tat) - d_{NUC} nRNA$$

$$\frac{d\ cRNA}{dt} = k_{export} nRNA - d_{CYT} cRNA$$

$$\frac{d\ GFP}{dt} = k1_{translate} cRNA - d_{GFP} GFP$$

$$\frac{d\ Tat}{dt} = k2_{translate} cRNA + k_{unbind} pTEFb_d + k_{transact} pTEFb_a - k_{bind} Tat - k_{transact}(LTR)(nRNA)(Tat)$$

$$\frac{d\ pTEFb_d}{dt} = k_{bind} Tat + k_{deacetyl} pTEFb_a - k_{unbind} pTEFb_d - k_{acetyl}(LTR)(pTEFb_d)$$

$$\frac{d\ pTEFb_a}{dt} = k_{acetyl}(LTR)(pTEFb_d) + k_{transact}(LTR)(nRNA)(Tat) - k_{transact} pTEFb_a - k_{deacetyl} pTEFb_a$$