**ODEs for CID System:**

$\frac{dN_A}{dt} = k_{-1}C_1 - k_1 M N_A$

$\frac{dM}{dt} = \frac{dN_A}{dt}$

$\frac{dN_D}{dt} = k_{-2}C_2 - k_2 C_1 N_D$

$\frac{dC_1}{dt} = \frac{dN_D}{dt} - \frac{dN_A}{dt}$

$\frac{dC_2}{dt} = \frac{dG_{off}}{dt} - \frac{dN_D}{dt}$

$\frac{dG_{off}}{dt} = k_{-3}G_{on} - k_3 C_2 G_{off}$

$\frac{dG_{on}}{dt} = -\frac{dG_{off}}{dt}$

$\frac{dr}{dt} = \alpha_r G_{on} - d_r r$

$\frac{dP}{dt} = \alpha_p r - d_P P$