$$\frac{dL(t)}{dt} = -\alpha_L L(t) + \beta_L P\left(1 - \left(\frac{P}{\gamma_L}\right)^2\right) + \beta_L(A_P)$$
$$\frac{dP(t)}{dt} = -\alpha_P P(t) + \beta_P L(t) + \beta_P \frac{A_L}{1 + \delta_P I_P(t)}$$
$$\frac{dI_P(t)}{dt} = -\alpha_{IP} I_P(t) + \beta_{IP} P(t)$$