$$\frac{dA(t)}{dt} = -(\lambda + m)A(t) \tag{1}$$

$$\frac{dA_g(t)}{dt} = mA(t) - \lambda A_g(t) \tag{2}$$

$$\frac{dB(t)}{dt} = \frac{rA(t)B(t)}{h_b + A(t)} - (\delta_b + d_{BG})B(t) \tag{3}$$