$$\frac{d[X]}{dt} = (\mu_1 + \mu_2 + \mu_3) * [X] - \frac{Fe1}{V}[X] - \frac{Fe2}{V}[X]$$

$$\frac{d[S]}{dt} = -k_2\ \mu_3\ [X] + \frac{Fe1}{V}[S_e] - \frac{Fe1}{V}[S] - \frac{Fe2}{V}[S]$$

$$\frac{d[G]}{dt} = -k_1\ \mu_1\ [X] - \frac{Fe1}{V}[G] + \frac{Fe2}{V}[G_e] - \frac{Fe2}{V}[G]$$

$$\frac{d[E]}{dt} = (k_3\ \mu_2 - k_4\ \mu_3) * [X] - \frac{Fe1}{V}[E] - \frac{Fe2}{V}[E]$$

$$\frac{d[V]}{dt} = Fe1 + Fe2$$