

A Generalized Lotka-Volterra

$$\frac{d \log(x_i(t))}{dt} = \alpha_i + \sum_j \beta_{i,j} x_j(t) + \epsilon_i u_i(t)$$

α_i : basal growth rate
 $\beta_{i,j}$: pairwise interaction
 $x_j(t)$: Absolute abundance of bacteria
 $\epsilon_i u_i(t)$: diet response (where $u_i(t)$ is diet)

